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ABSTRACT

One of the basic principles of the Language Development Approach is that students must learn the language necessary to understand, talk, and write about all subject areas in order to succeed in school. This book contains information about teaching primary school science in the Northwest Territories with lessons that emphasize language. The goals of the unit are to (1) develop student language proficiency; (2) provide opportunities for students to use language in many different situations and for many different purposes; (3) develop student listening, speaking, reading, writing, and thinking skills including the science process skills; and (4) expand student knowledge of the science concepts related to dinosaurs. Following a section on resources (background information on dinosaurs--general and descriptions, resources included with this unit--worksheets and games, and related English materials--magazines, an extensive list of children's books on dinosaurs, teacher's resources, films, etc., and a list of models, posters, puzzles, etc., lesson plans on six topics (where were dinosaurs, types, habitat, food, adapatations of dinosaurs, and the end of dinosaurs) are presented. Activity ideas for science/social studies, mathematics, language arts, music/poems/stories, art, physical education/movement, and special activities are suggested. Each lesson plan contains the following segments--exercises or activities: English vocabulary, English sentence patterns, English language concepts, special materials required, concept development/language exposure, language practice, and application. Poems, songs, and stories on this subject conclude the guide. The lessons are appropriate for students whose first language is English as well as for students who are learning English as a second language. (PR/CW)

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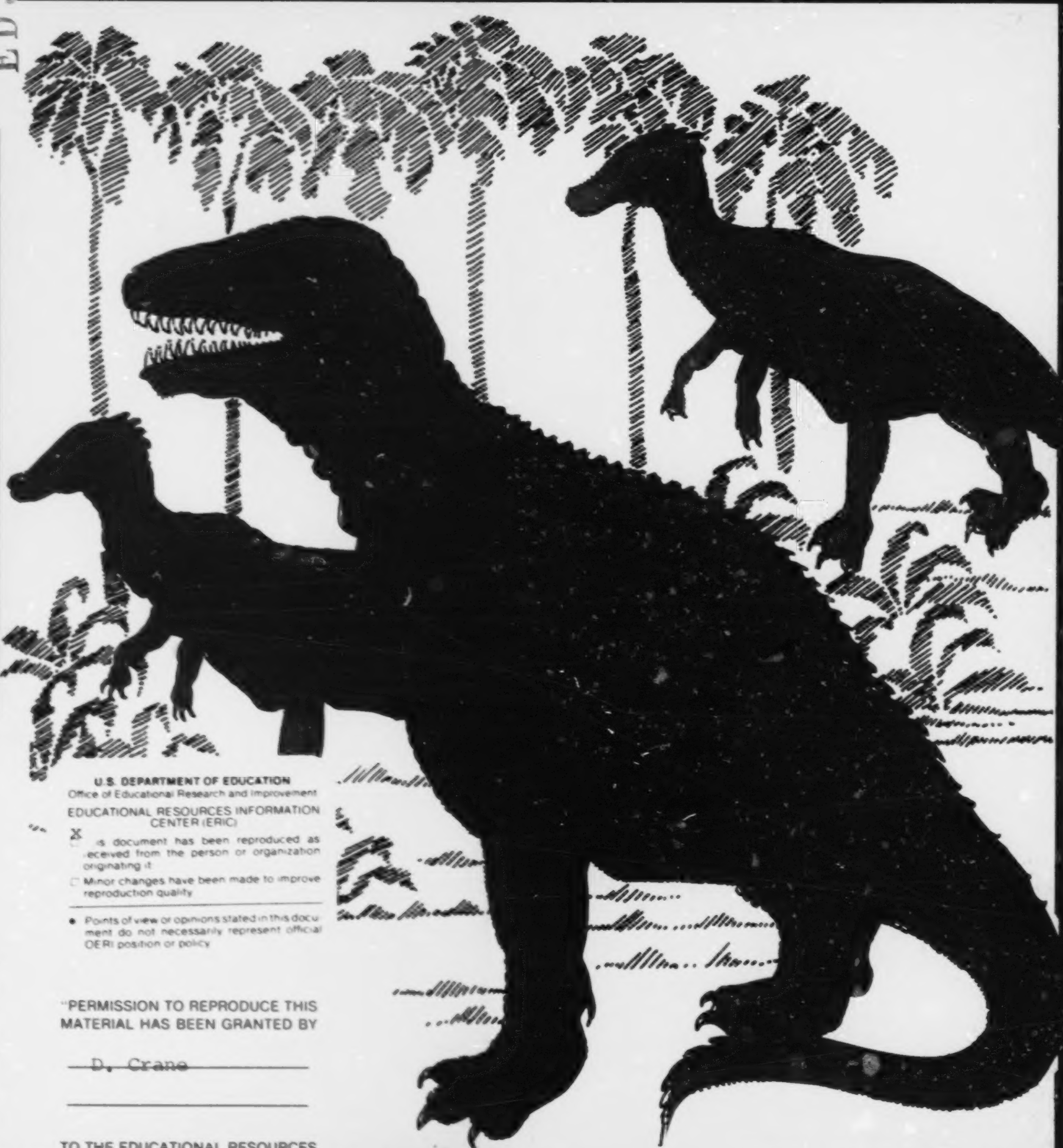

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Dinosaurs

A Language Development Unit for Science
Life and the Environment
Populations

Grade Two

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SCHOOL PROGRAMS
DEPARTMENT OF EDUCATION
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FOREWORD

Parents, educators, and students themselves all recognize the importance of language in the school curriculum. In order to have appropriate language programming, students need to have their experiences, skills, knowledge and, particularly, the language they bring to school identified and used as the basis for the program. Language programs should begin with and build upon these strengths. Where a child is dominant in a language other than English, he should be taught in that language. In many communities in the N.W.T., that means that the language of instruction should be Inuktitut or one of the Dene languages. Students in these communities need to gradually learn English as a second language. In instances where students speak a dialect of English upon school entry, the school's role is to respect and make use of the language the students bring. The school program should also help those students extend their English proficiency by learning the language used in varied communication situations and the language necessary for success with the academic curriculum. The aim of language instruction, where applicable and where possible, is to produce bilingual students.

Successful bilingual education requires good teaching in both languages. For many years northern educators have wrestled with the difficulties of teaching English with inappropriate commercial materials from the south. Teachers have been requesting assistance with how to most efficiently and effectively teach English as a second language/dialect. The Department of Education has determined that the Language Development Approach is the most suitable way to meet the needs of ESL/D students. The Department has developed these units for teachers to use in their classrooms. The Department therefore expects teachers to implement these units unless they can identify and justify to their Superintendent something more appropriate for their students.

Ed Duggan
Assistant Deputy Minister
School Programs

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Refining the format of and brainstorming activity ideas for the Language Development units involved the assistance of many northern educators. Members of the Teacher Committee who helped develop and pilot the original sample units included:

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<table>
<tr><td rowspan="2">EARTH, SPACE AND TIME **</td><td colspan="3">- - - - - - - - - - SUN, MOON AND SHADOWS - - - - - - - - -</td></tr>
<tr><td colspan="3">- - - - - - - - - - AIR AND AIR PRESSURE - - - - - - - - - -</td></tr>
</table>

* Other animals are covered under Social Studies topics: Fall, Winter and Spring.

Moose/Caribou	Seals
Beaver/Muskrat	Other fur-bearing animals
Rabbits	

** Weather will be covered in a Science/Social Studies/Math unit.

GENERAL CONCEPTS / UNIT OVERVIEW

DINOSAURS

Topic A - What Were Dinosaurs?

1. What were dinosaurs?
2. When did dinosaurs live on the earth?
3. How have we learned about dinosaurs?

Topic B - Types of Dinosaurs

1. What populations of dinosaurs lived on the earth?
2. How were the dinosaurs alike? How were they different?
   - physical appearance
   - ways in which they moved

Topic C - Where Dinosaurs Lived

1. What did the earth look like at the time of dinosaurs?
2. In what parts of the world did dinosaurs live?
3. In what kinds of habitats did dinosaurs live?

Topic D - Dinosaur Foods

1. What did dinosaurs eat?
2. How did dinosaurs obtain their food?

Topic E - Adaptations of Dinosaurs

1. What structural adaptations of the dinosaurs enabled them to survive?

Topic F - The End of the Dinosaurs

1. What happened to the dinosaurs?

HOW TO TEACH THE DINOSAURS UNIT

How does the topic "Dinosaurs" relate to the science program?

The Elementary Science Program (1-3 and 4-6, 1985) contains several themes which include concepts related to animals. The following chart shows how the topics outlined on the General Concepts/Unit Overview sheet (see Table of Contents for page number) and the lessons in this unit relate to the concepts suggested in the program guide.

Primary Science Guide	Unit
1.1 Living and Non-living Objects	
1. Objects are living or non-living based on the following characteristics:	
a) need food and water grow	Lesson: What Did Dinosaurs Eat?
reproduce die	Lesson: What Happened to the Dinosaurs?
2.1 Properties of Living Objects	
2. Living things can be classified according to properties.	Lesson: What Were Dinosaurs? Lesson: Dinosaurs Come In All Sizes Lesson: Types of Dinosaurs
5. Animals live in many different habitats within an environment.	Lesson: Where Did Dinosaurs Live?
7. Plants move in response to stimuli whereas animals have locomotion.	Lesson: A Swamp Romp
3.1 Populations	
1. The term "population" describes a group of organisms of the same kind in a particular environment.	Lesson: Types of Dinosaurs
2. The place of a population is its habitat.	Lesson: Where Did Dinosaurs Live?
3. Populations in a particular habitat form a community. These populations are usually interdependent.	Lesson: What Did Dinosaurs Eat?
5. Living things compete for the things they need to survive and reproduce.	

4.1 Adaptation to the Environment

2. A structural adaptation may help an organism to survive. Lesson: Structural Adaptations of Dinosaurs

7. Organisms show behavioural adaptations to environmental change. Lesson: What Happened to the Dinosaurs?

8. Organisms have structural adaptations to the environment. Lesson: Structural Adaptations of Dinosaurs

5.1 Interdependence of Living Things

1. Individuals interact within a population. Lesson: What Did Dinosaurs Eat?

2. Populations of animals depend on other populations for food. Lesson: What Did Dinosaurs Eat?

   a) the plant-eaters (herbivores)
   b) the meat-eaters (carnivores)

5.2 Classifying Living Things

1. A large group may be divided into smaller groups, each with shared characteristics. Lesson: Types of Dinosaurs

5.6 The Changing Earth

5. The structures in some sedimentary rocks help give us clues about the earth's history. Lesson: When Did Dinosaurs Live? Lesson: How Do We Know About Dinosaurs?

6. Fossils are the remains or traces of plants or animals in sedimentary rocks. Lesson: How Do We Know About Dinosaurs?

6.1 Populations

10. Population densities can change due to natural or man-made disasters or dangers. Lesson: What Happened to Dinosaurs?

Using the topic "Dinosaurs" as an organizing theme, this unit thus translates the concepts from the Science program guide into a set of teaching lessons. As you can see from the chart that outlines all the Science units for grades one through three, other units introduce and reinforce the concepts related to living objects and populations.

What part of my program is this unit?

One of the basic principles of the Language Development Approach is that students must learn the language necessary to understand, talk and write about all subject areas in order to succeed in school. Most of the material in the "Dinosaurs" unit is related primarily to Science; it is therefore part of your Science program. The unit also contains lessons which emphasize language and concepts from other subject areas. At the beginning of each lesson is a statement which indicates which subject area that lesson emphasizes. You can teach the Literature lessons during Language Arts periods or during Science, whichever you prefer.

What are the goals of this unit?

The goals of this unit include:

- developing students' language proficiency. The purpose is to increase their storehouse of language items and meanings (vocabulary) and to build their intuitive knowledge of structures (sentence patterns). The intent is not to have students study how the language works or to analyze it.

- providing opportunities for students to use language in many different situations and for many different purposes.

- developing students' listening, speaking, reading, writing, and thinking skills. The thinking skills developed include the scientific process skills described in the science program guide.

- expanding students' knowledge of the science concepts related to the "Dinosaurs" topic.

What grade level is this unit?

Schools throughout the N.W.T. have different ways of organizing students into classes. There are classrooms which consist of only one grade, while others combine two or even three grades. Small schools sometimes have to put primary and intermediate students together. Regardless of the grade level(s), students in each class will have a variety of levels of proficiency in English.

It is difficult to present a unit which teachers can use easily in all these different situations. The chart which outlines Science topics for grades one to three lists this unit under Grade Two. You will find, however, that the unit contains a variety of language items, sentence patterns and activity ideas. Some of the concepts and some of the language activities in the lessons are more suitable for younger/older students. This was done to accommodate the range of abilities which exist even in classes which are supposed to be one grade level and also for those teachers who have multi-grade classrooms and want to teach the same unit to the whole class.

What else do I need to know before I teach this unit?

It is important to understand the Language Development Approach which forms the basis of this unit and the Language Development Framework which forms the structure of each lesson. Please read the explanation of them which follows this section. It introduces the parts of each lesson and explains their purpose. Once you have read the description several times and taught a few lessons you probably will not have to read it for every unit.

How long should I spend on this unit?

The length of time you spend on each lesson and on the unit as a whole will depend in part upon what your students already know about the concept/topic and how interested they are in it. As with any unit you teach, however, the success of this unit will depend largely upon your interest in and enthusiasm for the topic. If you make the lessons stimulating to students, they will want to spend more time studying the topic.

In general, it is more important to cover a few concepts well and ensure that students incorporate the language items for those concepts into their language repertoires than to cover everything in the unit. If students begin to lose interest in the topic, wind up what you are doing and start a new unit.

Which lessons do I teach?

This unit includes a number of lessons. As the person who knows your students and their needs best, you must decide which lessons are appropriate for your students and which are not. You may decide not to teach certain lessons because:

- students already know the concept and the language covered
- students are not interested in that aspect of the topic
- the language is too difficult or is not appropriate
- the concepts are too difficult or are not appropriate

The initial assessment activity will help you identify which concepts and vocabulary students already know and therefore which lessons you can skip and which are more appropriate for you to teach. You might also want to check the students' cumulative files and/or discuss with other teachers which topics students have already covered. It is important to keep a record of which lessons you teach so that other teachers will not repeat that material in future years.

In what order should I teach the lessons?

You can teach the lessons in the order in which they appear in the unit or you can teach them in any order you think is appropriate for your students. Generally, the Science lesson for a topic should precede (or be taught at the same time as) the Language Arts lesson for that topic. The Language Arts lesson uses poetry or literature to reinforce the concepts taught during Science.

How do I adjust these lessons to meet the particular needs of my students?

The lessons in this unit are SAMPLE lessons. They may be used in classrooms where English is the first language of students (and they are very proficient), where students speak a dialect of English, or where English is a second language for students who come to school proficient in an aboriginal language. Because of this diversity of linguistic situations it is difficult to design lessons which are equally appropriate in every classroom. These lessons provide an example of the kind of language and activities which are appropriate to teach the concepts related to the topic. You may be able to teach them exactly as they appear here.

If you feel some aspect of a lesson is not appropriate for your students however, feel free to adapt it to meet their needs. You may wish to use some of the activity ideas to make up lessons of your own and teach those instead of the ones included. Some of the most common ways in which you might need to adjust the lessons include changing the:

a) amount or type of vocabulary and/or sentence patterns in a lesson. During the initial assessment activity you may find that students have/don't have particular vocabulary items or sentence patterns. You may need to make the language in each lesson simpler or more difficult, depending upon your students' proficiency. You may want to introduce fewer or more vocabulary items or sentence patterns. Students who are more proficient need to concentrate on vocabulary; you may want to omit all sentence patterns for them.

b) number of listening and speaking activities. Students who speak little or no English or who are not familiar with a topic require extensive aural/oral practice. This is particularly true of primary ESL students. You may want to delete reading and writing activities altogether for such students and substitute more listening and speaking activities. Students who are having difficulty speaking need more listening practice; you may want to increase the emphasis on listening for them. Students who are more proficient do not need as much listening and speaking practice; they can do more reading and writing activities.

c) kinds of activities suggested for listening, speaking, reading, and writing. Your students' ages, interests, abilities, needs, and language proficiency influence the kinds of activities you choose for them. Students with limited proficiency require more controlled Language Practice activities. Students who are more proficient can handle more open-ended activities. Your preferred teaching style and the materials and equipment available to you also affect your planning. You may want to change some of the activities to make them more suitable for your students. You may have to change others because you do not have the necessary resources.

d) sequence of activities suggested. Each lesson contains all three phases of the Language Development Framework: Concept Development/Language Exposure, Language Practice and Application. It is important to include all three phases in your teaching. However, you may want to alter the sequence in which you do the activities within each phase. For example, in the Language Practice phase listening and speaking activities always precede reading and writing activities. Usually it is important to develop aural/oral skills before introducing/developing literacy skills. However, if you have older students who are more proficient in reading and writing you may have to combine those activities with listening and speaking to keep students interested and involved. This is not as likely for primary students; they require simple physical actions to help focus their attention and energy during listening and speaking activities.

e) content used to teach the concept in each lesson. These units have been developed for use throughout the N.W.T. in various cultural and linguistic situations. It is difficult, therefore, to be as culturally specific in the lessons as desirable. As you plan your lessons, you must be as sensitive as possible to the cultural values, experiences, and lifestyles of your students. Please make the lessons as relevant to your community and your students as possible. If you think anything might be offensive to parents or students in your community please omit it or substitute more appropriate content. If in doubt, ask! LEA members, classroom assistants, and parents can provide suitable alternatives. If you are teaching any of the lessons in an aboriginal language, you probably will need to change much of the specific content in those lessons.

f) language in which you teach the lesson. If you teach in a classroom in which an aboriginal language is the language of instruction and English is taught as a second language you will want to teach some of the lessons in each language. For students who are just learning to speak English, the language in some of the lessons is too difficult. Teach those lessons in the aboriginal language. In such situations, consider teaching the lessons as follows:

ABORIGINAL LANGUAGE (during Science)	ENGLISH (during ESL)
What Were Dinosaurs?	Dinosaurs Come In All Sizes
When Did Dinosaurs Live?	Types of Dinosaurs

How Do We Know About Dinosaurs?
Where Did Dinosaurs Live?
What Did Dinosaurs Eat?
Structural Adaptations of Dinosaurs
What Happened to Dinosaurs?

A Swamp Romp

If you teach in a classroom in which English is the language of instruction you will teach all of the lessons in English. In such situations, you might teach some lessons during your Science and Social Studies periods and others during your Language Arts periods. If your students are not very proficient in English you may want to omit some lessons altogether.

How do I group students?

These lessons have been designed so that you can to teach one lesson to the whole class. You can probably do Concept Development activities with everyone in most instances. Then you can group students for Language Practice activities according to their needs and abilities. Students who require listening and speaking practice can work with the teacher, a classroom assistant, a tape recorder, or a language master while other students do related reading and writing activities. In this way you can work with the whole class on the same lesson, but students can perform at their own individual skill levels.

Sometimes you may want to group students and teach each group a different lesson. You could organize these groups in two ways:

1) include students with different levels of proficiency in each group. The students who are more proficient serve as models for less proficient students. Teach each group a lesson from a different topic;

e.g., group A: Lesson: How Do We Know About Dinosaurs?
group B: Lesson: What Happened to the Dinosaurs?

and have students share their work with each other.

2) include students with similar proficiency levels in each group. Teach each group a lesson using material at its proficiency level:

e.g., group A: Lesson: Dinosaurs Come In All Sizes
group B: Lesson: What Were Dinosaurs?
group C: Lesson: Structural Adaptations of Dinosaurs

What kind of preparation do I need to do before teaching a lesson?

First of all, you should read over the lesson so that you are familiar with it and with the materials you require to teach the lesson.

Secondly, you should make sure you have all your materials ready, even if it means delaying the introduction of a unit or lesson for several days. This includes whatever resources you require for the Concept Development activities, as well as Language Practice materials: vocabulary cards, pictures, sentence strips, etc.

Initially it may seem as if there is a lot of preparation for each lesson, but one lesson may take several days to teach and most lessons use the same materials over and over again in different ways. Students in small groups use many of the materials from Concept Development activities during Language Practice. If you work in a school where more than one teacher is using the units, perhaps you can share the preparation work required. Older students often enjoy making things like sentence strips after school as well. Once you have made the materials for one lesson, be sure to save them for another teacher or another year! Plastic envelopes have been provided to help you keep all the materials for one unit together.

Many illustrations/worksheets that you need for the lessons have been included. **Please note however, that the illustrations in the accompanying envelope are Masters.** Please use them only to make your own copies. (You may have to adjust the size of some to make stencils or other resource materials.) When you are finished with the unit, please sequence the Masters and return them to the envelope so that other teachers will be able to find all the materials easily.

How do I schedule a lesson on my timetable?

Because the lessons emphasize language related to different subject areas, you may want to teach them during various subject periods. This means you may be working on two or three lessons at the same time, each during a different subject. Since the lessons all focus on the same theme, language and concepts emphasized during one period will reinforce those learned during another. It also means that you would be combining the normal times allocated each week for Science and Social Studies to teach this Science unit for three weeks or a month. You could then switch to a Social Studies unit for several weeks using both time periods.

As you plan, keep in mind that one lesson is not necessarily equivalent to one day's work. You will require several days to cover most lessons. You need this amount of time to make certain students internalize new concepts and language items. The chart below shows how you might teach the lesson "Dinosaurs Come In All Sizes" during your Science period over a week.

Note that the Concept Development activities are spread over several days. This helps reinforce both concepts and language and gives students who miss one day's lesson other opportunities to be exposed to the material. Note also that listening and speaking activities precede reading and writing so that students are very familiar with the language orally/aurally before they work with it in print.

Key

(L) = Listening activity
(S) = Speaking activity
(R) = Reading activity
(W) = Writing activity

"DINOSAURS COME IN ALL SIZES"

	Monday	Tuesday	Wednesday	Thursday	Friday
Concept Development	#1a	#1a	#1b		
Language Practice	#1 L	#2 L #3 L/S	#4 S #6a S/R	#5 S #6a S/R b #7 R	#6a S/R #8 R/W
Application		#2	#1	#1	#1

How do I evaluate student progress in this unit?

Initial Assessment

The initial assessment activity (see Table of Contents) which you do with the students before any of the lessons will help you determine which concepts and language students already know and which they need to learn.

Ongoing Assessment

It is important to continue assessing students' success in mastering language items, skills and concepts throughout the unit. Each phase of the framework provides opportunities for assessment. During the Concept Development/Language Exposure activities you can informally assess students' understanding of new concepts through observation. Watch to see which students have difficulty matching new language items with the appropriate objects or meanings. It is important to ensure that all students understand new vocabulary and sentence patterns before starting Language Practice activities.

The nature of the Language Practice activities allows you to assess individual student performance of listening, speaking, reading, and writing skills. You can decide which activity to do next based on student performance in the previous activity. Those students who have difficulty with aural/oral activities require extensive practice before doing reading and writing.

The Application activities have been designed to give you an opportunity to determine how much of the language for that lesson students have learned. You can also determine whether students understand the language and concepts.

In addition to observing students during lesson activities, sometime during the course of the unit each student should have a personal conference with you to review work from various lessons. The one-to-one nature of this meeting allows you to determine more effectively:

1. specific weaknesses and strengths in listening, speaking, reading, writing skills,
2. comprehension of and proficiency using new language items,
3. topics and areas within a topic of particular interest to the student,
4. individual progress with the development of scientific process skills (thinking skills),
5. comprehension of science concepts included in the unit.

For the student this meeting serves as an important opportunity to articulate thoughts and feelings about the topic, share work with an interested adult, and identify future projects and directions. You can use the conference to take an in-depth look at one piece of independent reading/writing, to teach skill lessons needed to support and encourage student efforts, and to determine appropriate activities for future lessons.

Final Assessment

The culminating activities provide further informal assessment opportunities. During these activities students use all the concepts, skills and language they have learned throughout the unit. In addition, you may want to use your own assessment techniques or instruments to determine what students have learned. There are examples of simple evaluation activities at the end of the unit.

What kind of records should I keep for this unit?

You will want to keep records for yourself of individual student's progress and mastery of skills, concepts and language. These records can be a combination of anecdotal notes based on observations, check lists, formal or informal tests, taped samples of students' speech and reading, and samples of written work.

Students should also be responsible for keeping records of what they have accomplished. They can keep lists (poems they have learned, stories they have read, books they have written), journals, and their own samples of speech, reading and writing.

Finally, it is also important to keep a list for the next teacher of which units you have taught and which concepts have been covered in those units. Hopefully this will prevent those groans of "We did that last year," or even worse "We've done that every year since grade one!"

You will find more detailed information on evaluation and record keeping forms in the booklet Evaluation Guidelines for the Language Development/Science Units.

INTRODUCTION TO THE LANGUAGE DEVELOPMENT APPROACH

This unit consists of lessons which illustrate how to implement the Language Development Approach in the classroom. In order to use these lessons most effectively, it is important to be familiar with and understand:

a) the principles which form the basis of the approach, and
b) the methodological framework which provides the structure for the lessons and applies the principles to teaching practice.

The following is a brief explanation of the principles and the framework. For a more in-depth discussion of both, refer to the appropriate sections in the Language Development ESL/ESD guide.

PRINCIPLES

The Language Development Approach draws on elements of many approaches to teaching second languages and English language arts and integrates these to form a broad set of principles regarding language teaching. These principles include:

1. **Students need to have their experiences, skills, knowledge, and particularly, the language they bring to school identified and used as the basis for the school language program.** The program should begin with and build upon these strengths. Where children are dominant in a language other than English, they should be taught in that language. In many communities in the N.W.T., that means that the language of instruction should be Inuktitut or one of the Dene languages. Such students should gradually learn English as a second language. In instances where students speak a dialect of English upon school entry, the school's role is to respect and make use of the language the students bring, and help them learn the English used in other communication situations and which is necessary for success with the curriculum. The aim of language instruction, where applicable, and where possible, is to create bilingual students.

2. **Students need to learn to articulate for themselves and to communicate their thoughts, feelings, needs, opinions, and intentions for a variety of purposes in many different communication contexts. They need to be able to understand, learn from and respond to the communication of others.** This involves being able to:

   a) express and inquire about personal needs, desires, feelings;
   b) socialize;
   c) direct;
   *d) express and find out intellectual attitudes;
   *e) impart and seek factual information on past and present experiences;
   *f) reason logically;
   *g) predict;
   *h) project,;
   *i) imagine.

   * Success in school depends largely upon the students' abilities to use language in these ways.

3. **ESL/ESD students need to spend more time learning to speak English than they do learning about English.** Until students have an extensive language repertoire, and can use language for a variety of purposes and in many different situations, they are not ready to analyze language. When students have developed an intuitive grasp of how English works, they can begin to study language concepts and how to apply them.

4. **Students need to learn language, but they also use language to learn.** Therefore, language should be taught across the curriculum. Whether students are learning a subject in their first language or in a second language, the development of each student's language skills is essential to achievement in the subject.

5. **Students need to learn language that is meaningful.** It is easier to accomplish this when teaching language in a context. Therefore, all teachers, in all subject areas, must attend to concept development. Without adequate concept development, the language students learn is either vague or devoid of meaning.

6. **Students need to learn to develop their thinking skills and to engage in more abstract levels of thought as they mature.** They must learn the language that

allows them to express their thinking about concepts. Initially, they need to learn concrete vocabulary and functional sentence patterns as they learn to recall, match, sequence, classify, etc. during activities. Eventually they need to learn more abstract terms and more complex sentence patterns as they grow in their ability to think more abstractly: generalizing, analysing, imagining, predicting and evaluating.

7. **Students need to participate in language activities that integrate the language strands of listening, speaking, reading, and writing.** When these strands are taught in isolation from each other in the guise of subjects such as spelling, phonics, grammar, reading, etc., student learning becomes fragmented. Students have difficulty understanding the relationships among listening, speaking, reading, and writing and lose the benefit of one or more strands preparing for and/or reinforcing growth in another e.g., discussion and brainstorming which involve listening and speaking prepare students for writing. First and second language programs should therefore integrate listening, speaking, reading, and writing skills. Specific skills taught will vary with the proficiency level of the students. In the initial stages reading and writing activities should use only language which students have internalized already through aural/oral work. Strong oral proficiency is a prerequisite to learning to read.

a) Successful readers rely on three language cue systems:

- grapho-phonemic
- semantic-associational
- syntactic

The ability to use the latter two systems is a function of oral language proficiency. The greater the oral proficiency or degree of internalized language of the students in either their first or second language, the more able they are to use the latter two systems. Reading instruction should not emphasize the use of the grapho-phonemic system to the exclusion of the semantic associational and syntactic systems.

b) Successful writers also rely on three cue systems. They must possess a meaning base on which to draw, a storehouse of vocabulary representing the meaning base (semantic-associational), and an intuitive sense of how the English linguistic system works (syntactic). Mechanical skills (grapho-phonemic) are just the tools which enable students to communicate knowledge more effectively.

8. **Students need to learn "real" language and how to use it in the natural situations in which it is required.** The vocabulary items and sentence patterns used in lessons should be as similar as possible to the everyday language people actually use. Students require opportunities to practice the language by interacting with others. They will not learn to use language effectively solely through individual paper and pencil exercises.

Program content, classroom organization and teaching techniques used to develop concepts and language and skills should:

a) reflect all of the above, and
b) vary according to:

- the language proficiency of the students in the first and second language,
- cultural background (experiences, interests, and cognitive abilities),
- age/grade levels,
- type of topic,
- learning style of students,
- materials and equipment available,
- teaching style of teacher.

FRAMEWORK

The Language Development Approach uses the following framework to structure lessons involving language learning and conceptual development for all subject areas or for any topics of personal or cultural relevance and interest. The framework consists of three phases:

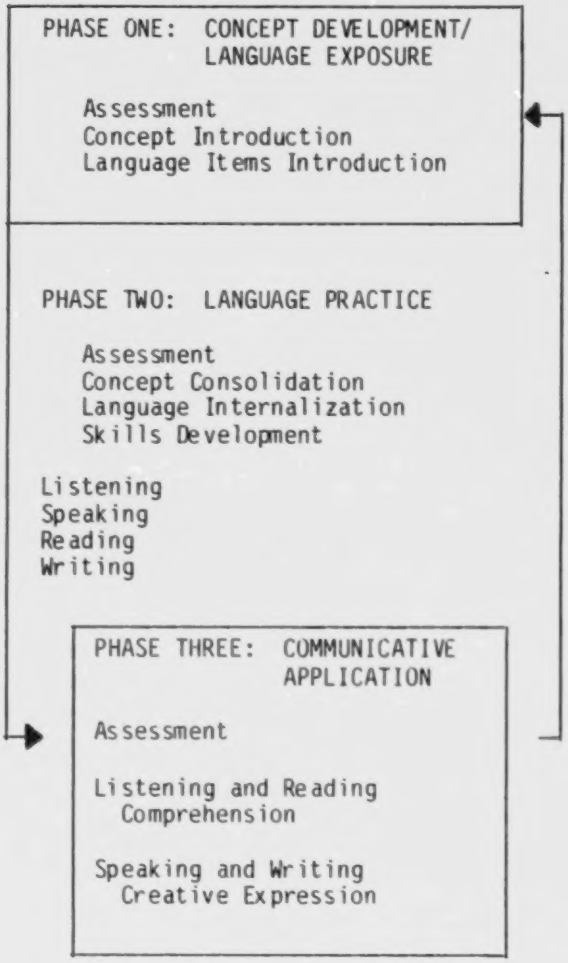
Phase One:	Concept Development/Language Exposure
Phase Two:	Language Practice
Phase Three:	Communicative Application

LANGUAGE DEVELOPMENT FRAMEWORK

(Based on the work of Jim MacDiarmid
Adapted by B. Pugh and C. McGregor)

INTELLECTUAL SKILLS

Perceiving
Retrieving
Recalling
Matching
Sequencing
Classifying
Comparing/Contrasting
Generalizing
Inferring
Predicting
Interpreting
Hypothesizing
Imagining
Applying
Analyzing
Synthesizing
Evaluating



PHASE ONE: CONCEPT DEVELOPMENT/ LANGUAGE EXPOSURE

Assessment
Concept Introduction
Language Items Introduction

PHASE TWO: LANGUAGE PRACTICE

Assessment
Concept Consolidation
Language Internalization
Skills Development

Listening
Speaking
Reading
Writing

PHASE THREE: COMMUNICATIVE APPLICATION

Assessment

Listening and Reading Comprehension

Speaking and Writing Creative Expression

Phase One: Concept Development/Language Exposure

At the beginning of this phase, it is important to assess what conceptual and linguistic knowledge students already possess for a topic. This assessment establishes the appropriate starting point for instruction and helps determine which concepts, experiences, and language items to emphasize.

During this phase, students participate in meaningful activities or experiences through which they learn new concepts related to the topic of study. As much as possible, these activities should involve direct, firsthand, active learning with concrete materials. Where necessary, e.g., in a unit on space, indirect or analogous experiences (films, filmstrips) allow students to move beyond the confines of the immediate classroom to explore concepts associated with other times and places. These activities and experiences help students build bridges between what they already know and new concepts.

While they carry out the concept development activities, students hear and use the new language items that express the concepts. They learn to associate new vocabulary with the relevant objects or actions and to express the relationships among concepts with appropriate sentence patterns. It is essential that students learn the meaning of all new language items during this part of the lesson.

You may choose to use the students' first language during this phase when students have little or no English. You can conduct the assessment tasks in their first language to determine the extent of their conceptual knowledge. If the concepts are familiar, concentrate in ESL classes on teaching the related English language items. If the concepts are new, teach them to students in their first language and then introduce English language items. In classrooms where English is the language of instruction, have the Classroom Assistant explain difficult concepts in the students' first language to be sure they understand them.

Phase Two: Language Practice

In Phase Two, students use the new language items introduced in Phase One in a variety of activities that develop listening, speaking, reading, and writing skills. Through intensive practice of items in a variety of ways, students come to "own" the new language, i.e., commit it to memory so that it becomes part of their permanent storehouse of language items. These activities also continue to strengthen the bond developed in Phase One between the new concepts and the language items that represent those concepts. While the whole class may participate in most of the Phase One activities, it is important to group students for language practice according to their language skills and needs. For students who are not proficient in English, use only language items that they are comfortable with aurally/orally in reading and writing activities.

Phase Three: Communicative Application

The final phase of the lesson sequence provides opportunities for students to use their acquired knowledge and language to communicate in a variety of situations. Students show they have understood the new concepts and can use the new language items as they interact with others. These activities involve students in listening, speaking, reading, and writing to solve problems, bridge an information gap, share information, complete a task, develop an arts and crafts project, share a finished product and explore related concepts and language. While carrying out these activities, the teacher can work individually with students to assess the extent to which they have mastered the concepts and language from the lesson.

In addition to the communicative application activities for each lesson, there are culminating activities at the end of each unit which provide opportunities for students to use all the concepts and language they have learned throughout the unit. During these activities the teacher can meet with students to review their work and what they have learned during the unit.

Intellectual Skills

An essential component of the framework is the development of intellectual skills. Learning new concepts and language involves thinking skills. On the other hand, the ability to think abstractly involves conceptual and linguistic knowledge.

Students who lack the prerequisite basic experiential and linguistic knowledge for a topic cannot engage in activities that require them to apply or solve problems using that knowledge. In moving towards abstract levels of thinking students must:

- acquire simple and concrete concepts and the corresponding labels,
- see patterns and relationships among concepts and form progressively larger and more inclusive conceptual networks in the form of principles and generalizations,
- apply the principles and generalizations to new situations, and
- analyze, synthesize, and evaluate old and new knowledge to solve problems.

In the Concept Development/Language Exposure phase, assessment activities establish whether or not students have basic building block concepts and language to engage in more abstract thinking about a topic. Subsequent activities fill gaps and/or extend the students' background. The structured nature of Language Practice activities demands less high level intellectual activity. Answers are more convergent in nature; the information readily provided or available. However, Communicative Application activities require divergent thinking. Students draw on what they already have learned during the previous two phases to bridge an information gap or solve a problem.

USING THE FRAMEWORK

The Language Development Framework:

- helps students acquire a conceptual background about a topic
- helps students acquire language to express their knowledge about that topic
- provides opportunities for students to use their knowledge and related language in a variety of situations and
- provides opportunities for students to engage in higher levels of thinking.

The framework forms the basis for the following lessons. Keep in mind that the techniques and activities you use with students depend upon many factors:

- cultural background of students
- learning style of students
- age level of students
- proficiency in English
- type of topic
- materials and equipment available, and
- preferred teaching style of teacher.

Background Information on Dinosaurs

General Information

180 million years ago

- many tree-like green plants. The air is very warm and humid. No birds or flowers. Swampy.
- many insects.
- dinosaurs are quite small. **Procompsognathus,** a meat-eater, is about the size of a turkey with no feathers. **Plateosaurus** (Flat Lizard) is about 6 m long and is a plant-eater.

150 million years ago

- water levels have risen; shallow lakes and seas cover much of the earth. Climate is warm and humid.
- first true bird, **Archaeopteryx,** lives. It does not fly, but has claws to pull itself along in the trees. **Ornitholestes** (the Bird Stealer) is about 150 cm long. It has a light body and long legs. It has long, strong fingers on its forelegs that enable it to snatch birds. **Rhamphorhyncus** (Prow Beak)is a flying reptile that has no feathers but is covered with leathery skin. A disc on the end of its tail helps it steer. **Diplodocus** is the longest of all dinosaurs, measuring 26 m from its nose to the tip of its tail. **Apatosaurus** (used to be called Brontosaurus) is 20 m in length and weighs about 30 tonnes. **Brachiosaurus** is the heaviest of all dinosaurs, weighing about 60 tonnes. Diplodocus, Apatosaurus and Brachiosaurus are all plant-eaters. **Allosaurus,** a meat-eater, is 11 m long. He has sharp claws at the ends of strong, short forelegs.

120 million years ago

- the air is fresher and cooler. Countryside is more rolling now with oak and hickory woods. Swamps, lakes and seas still present.
- new groups of dinosaurs have appeared that have protected bodies. This protection has developed because the animals cannot run rapidly. **Stegosaurus** (Covered Lizard) and **Ankylosaurus** (Curved Lizard) both wear coats of armour. Some "duck-billed" dinosaurs have also appeared at this time. They live close to water ; some of them like to stay in the water and some stay underwater. They have special spaces built into their skulls in which to store air. **Iguanodon, Trachodon,** and **Corythoraurus** are "duck-billed" dinosaurs. **Gorgosaurus,** a meat-eater, also lives at this time.

100 - 90 million years ago

- this is the age of the horned dinosaur. **Protoceratops** (First Horned Face) is a plant-eater who walks on all four legs. **Styracosaurus** (Spike Lizard) and **Monoclonius** (Single Horn) are also well protected against the meat eaters.

70 million years ago

- large sections of land have been pushed up from the bottom of the seas which have shrunk. Some of the lands are now high, dry plains. Some mountains are also present. **Pteranodon** is a flying reptile with a 6 m wingspan. **Triceratops** (Three Horn Face) is a giant dinosaur who fights against **Tyrannosaurus Rex** (King Lizard). Tyrannosaurus is almost 15 m long and has teeth that are 15 cm long and very sharp. He walks on his two hind legs.

* **Brachiosaurus** was the heaviest dinosaur.
* **Diplodocus** was the longest dinosaur.
* **Compsognathus** was the smallest dinosaur (about the size of a crow).

Descriptions of Dinosaurs

(Please note that there were many more kinds of dinosaurs than those listed and described here. For information on other dinosaurs, refer to one of the books listed under Teacher's Resources.)

Allosaurus (Al-oh-saw-rus)

- "foreign reptile"
- large meat-eater
- fossil remains found in North America
- body length 10m

Apatosaurus (A-pat-oh-saw-rus)

- "headless reptile"
- used to be known as Brontosaurus
- shorter than Diplodocus but much heavier (approx. 30 tonnes)
- tiny, peg-like teeth
- fossil remains found in North America
- body length 20m

Brachiosaurus (Brack-ee-oh-saw-rus)
- "arm reptile"
- weighed 80 tonnes
- front legs were longer than the back ones to support its weight
- fossil remains found in North America
- body length 23m

Dimetrodon (Dee-mee-tro-don)

- "two-sized tooth"
- flesh-eater with sharp teeth
- "sail" on back helped to control body temperature
- fossil remains found in U.S.A.
- body length 3.3m

Diplodocus (Dip-lod-oh-kus)

- "double beam"
- longest land animal ever known
- whip-like tail used to fend off enemies
- fossil remains found in North America
- body length 28m

Edmontosaurus (Ed-mon-toe-saw-rus)

- "reptile from Edmonton"
- flat-headed
- broad spoon-like beak
- fossil remains found in Canada
- body length 10m

Iguanodon (Ig-wa-no-don)

- "iguana tooth"
- had powerful back legs and tail
- sharp claw on each thumb used as a weapon
- fossil remains found in Europe and North America
- body length 9m

Monoclonius (Mon-oh-clo-nee-us)

- "single shoot"
- resembled present day rhinoceros
- single horn on nose and very small eyebrow ridges
- lived in herds
- fossil remains found in North America
- body length 8m

Parasaurolophus (Para-saw-ro-loh-fuss)

- "reptile with parallel-sided crest"
- hollow crest may have been used like a snorkel for feeding underwater
- fossil remains found in North America
- body length 10m

Plateosaurus (Plat-ee-oh-saw-rus)

- "flat reptile"
- lived in herds
- normally walked on all fours, but could stand on back legs to reach leaves on trees
- fossil remains found in Germany
- body length 6.5m

Protoceratops (Pro-toe-ser-a-tops)

- "first horned face"
- strong beak for eating tough plants
- walked on all fours
- first dinosaur nests found; some had fossil fragments of baby dinosaurs that had died before hatching
- fossil remains found in Mongolia
- body length 2m

Pteranodon (Ter-an-oh-don)

- "winged and toothless"
- coast-living
- ate fish which were stored in its pouch
- fossil remains found in North America
- body length 1m

Saurolophus (Saw-rol-oh-fuss)

- "ridged reptile"
- prong protruding from back of head may have been used for making bellowing noises
- fossil remains found in Mongolia and North America
- body length 10m

Stegosaurus (Steg-oh-saw-rus)

- "roofed reptile"
- once thought that plates on its back were used for protection; now thought they were used to regulate body temperature
- tail spikes were used for defence
- fossil remains found in North America
- body length 9m

Triceratops (Try-ser-a-tops)

- "three-horned face"
- weighed over 8 tonnes
- fossil remains found in North America
- body length 11m

Tyrannosaurus (Tie-ran-oh-saw-rus)

- "tyrant reptile"
- largest meat-eater; stood 5m
- weighed 7 tonnes
- walked on back legs; tore prey with its feet
- fossil remains found in U.S.A.
- body length 12m

RESOURCES: INCLUDED WITH THIS UNIT

Book

Edu-colour Book 701 - DINOSAURS
Royal Ontario Museum

Filmstrip (available from your Resource Centre)

Dinosaurs
National Geographic Society, 1978

Resources to accompany lessons

When Did Dinosaurs Live?

- worksheet: When Did Dinosaurs Live?

Types of Dinosaurs

- sample dinosaur BINGO card
- worksheet: Scrambled Dinos

Where Did Dinosaurs Live?

- worksheet: Where Did Dinosaurs Live?

What Did Dinosaurs Eat?

- worksheets: Can You Classify the Dinosaurs You Know?
  It Doesn't Belong!
  Feed the Dinosaur

Miscellaneous

- Tyrannosaurus tooth
- Match the Eggs
- Stegosaurus puzzle
- Mini-Dino
- Whirly-Saurus Pteranodon
- Dinosaur conversation
- Dinosaur Certificate

RESOURCES: RELATED ENGLISH MATERIALS

Magazines, Pamphlets

Chickadee - May 1979
- May 1982

Ranger Rick - April 1977
- June 1978
- September 1979
- January 1979
- April 1980

Owl - Spring 1976

Zoobooks - "Dinosaurs" Volume One, Number Nine, June 1985
Available from: Wildlife Education, Ltd.
930 West Washington Street
San Diego, California 92103

National Geographic - August 1978

Teacher's Resources

What Really Happened to the Dinosaurs?
Daniel Cohen
E.P. Dutton, 1977

Dinosaurs and More Dinosaurs
M. Jean Craig
Four Winds Press, 1968

Dinosaurs
J. Martin and T.L. Parker
Golden Press, 1973

About Dinosaurs
Margery Morris
Penguin Books, 1972

To Find a Dinosaur
Dorothy E. Shuttlesworth
Doubleday and Co. Inc., 1973

Prehistoric Animals
Peter Zallinger
Random House, 1978

Dinosaur Encyclopedia
Dr. Michael Benton
Wanderer Books
Simon & Schuster Inc., 1984

Prehistoric Life
John Howard
Macdonald & Co. Ltd., 1981

Prehistoric Life
Ramona-Ann Gale
Macdonald Educational Ltd., 1973

Dinosaurs & Other Prehistoric Animals
A Totem Guide
David Norman
Usborne Publishing Ltd., 1980

The Age of Dinosaurs - A Photographic Record
Jane Burton
Methuen Publications, 1984

A Vanished World, the Dinosaurs of Western Canada
Dale Russel
National Museums of Canada, 1977

Archosauria, A New Look at the Old Dinosaur
John McLoughlin
Viking, n.d.

A New Look at the Dinosaurs
Alan Charig
Mayflower, n.d.

The Dinosaur Scrapbook
Donald Glut
Citadel Press, 1980

The New Dinosaur Dictionary
Donald Glut
Citadel Press, 1982

Dinosaur Country
Renie Gross
Western Producer Prairie Books, 1985

A Field Guide to Dinosaurs
David Lambert
Avon Books, 1983

The Audubon Society Field Guide to North American Fossils
Ida Thompson
Alfred E. Knopf, 1981

The Dinosaurs and the Dark Star
Robin Bales and Cheryl Simon
Macmillan Publishing Company, 1985

The Flight of the Pterosaurs (A Pop-Up Book)
Keith Moseley
Simon and Schuster, 1986

Films, Filmstrips and Slides

Dinosaurs (film)
International Tele-Film Enterprises Ltd., 1980
(This is a wonderful film - full of information, but also lots of fun!)

Prehistoric Life (set of six filmstrips)
Encyclopedia Britanica Education Corporation

Dinosaurs (filmstrip/cassette)
National Geographic Society, 1978

Amazing World of Dinosaurs (filmstrip/cassette)
Walt Disney

Different Dinosaurs (filmstrip)
What Happened to the Dinosaurs? (filmstrip)
Available from: Ethos Ltd
2250 Midland Avenue, Unit 9
Scarborough, Ontario
M1P 3E6

When Dinosaurs Ruled the Earth (filmstrip)
Available from: Moyer
25 Milvan Drive
Weston, Ontario
M9L 1Z1

Read-Along Science: Dinosaurs (filmstrip/cassette/book)
Guidance Associates, 1977

Fossils - Traces of the Past (filmstrip/cassette)
National Geographic Society, 1982

Learning About the Past: The Science of Archaeology (filmstrip/cassette)
National Geographic Society, 1981

Dinosaurs: Giant Reptiles (Wonder of Learning Kit)
Reptiles and How They Grow (Wonder of Learning Kit)
National Geographic Society, 1986

Plants and Animals of Long Ago (filmstrips/cassetttes)
National Georgraphic Society, 1986

Children's Books

Dinosaurs
Kathleen N. Daly
Golden Press, 1976

Dinosaurs, The Terrible Lizards
Rosalie Davidson
Golden Gate Junior Books, 1969

The How and Why Wonder Book of Dinosaurs
Darlene Geis
Wonder Book, Inc., 1960

Prehistoric Monsters Did the Strangest Things
Leonora and Arthur Hornblow
Random House, 1974

Dinosaurs
Kathryn Jackson
National Geographic Society, 1972

How to Make a Dinosaur
Sigmund Kalina
Lothrop, Lee & Shepard Co., 1976

Little Dinosaurs and Early Birds
John Kaufmann
Thomas Y. Crowell Co., 1977

Dodos and Dinosaurs are Extinct
Julian May
Creative Educational Society, 1970

I Can Spell Dinosaur
Roach Van Allen
DLM Teaching Resources, 1985

Dinosaur Time
Peggy Parish
Harper and Row, 1974

Dinosaurs and Their World
Laurence Pringle
Harcourt, Brace and World, Inc., 1968

Dinosaurs
Nora Sullivan
Franklin Watts, 1976

Digging for Dinosaurs
W.E. Swinton

Giant Birds and Monsters of the Air
William Wise
G.P. Putnam's Sons, 1969

Dinosaurs
Peter Zallinger
Random House, 1977

Dinosaur Funny Bones
Jean Burt Polhamus
Prentice-Hall, 1974

The Smallest Dinosaur
Seymour Simon
Crown Pubs, Inc., 1982

The Big, Big Egg: The Story of the Birth of a Dinosaur
M. Bump
T.S. Denison & Co. Inc., n.d.

Quiet on Account of Dinosaur
Catherine Wooley
William Morrow and Company, 1964

Tyrannosaurus Wrecks: A Book of Dinosaur Riddles
Noelle Stern
Thomas Y. Crowell, 1979

The Hungry Thing
Jan Sleplian and Ann Seidler
Scholastic Book Services, 1967

The Little Blue Brontosaurus
Byron Preiss
Byron Preiss Visual Publications, Inc., 1983

The Amazing Fact Book of Monsters
Peter Marriott
A & P Books, 1980

My Visit to the Dinosaurs
Aliki
Thomas Y. Crowell Company, 1969

The Big-Little Dinosaur
Dorothy Geis
Wonder Books, Inc., 1959

Amy's Dinosaur
Danny and the Dinosaur
Syd Hoff
Harper & Row, 1958

The Wonderful Egg
Daholv Ipcar
Doubleday and Company, Inc.

From Dinosaurs to Fossils
Annegert Fuchshuber
Carolrhoda Books, Inc., 1981

Dinosaurs and Other First Animals
Dean Morris
Macdonald-Raintree, Inc., 1977

Giant Dinosaurs
Erna Rowe
Scholastic-TAB Publications Ltd., 1973

Prehistoric Animals
Macdonald First Library
Macdonald Educational Ltd., 1970

The Children's Picture Prehistory - Dinosaurs
Anne McCord
Usborne Publishing Ltd., 1977

Dinosaurs
Dorothea and Sy Barlowe
Random House, 1977

Terrible Tyrannosaurus
Elizabeth Charlton
Dandelion Press, 1982

Dinosaurs
Mary L. Clark
Childrens Press, 1981

Dinosaur Story
Joanna Cole
Morrow, William & Co., Inc., 1974

Brontosaurus: The Thunder Lizard
Beverly Halstead
Western Pub. Co., Inc., 1983

The ABC Dinosaur Book
Jill Kingdom
Childrens Press, 1982

Dinosaur Days
David C. Knight
McGraw-Hill Book Co., 1977

Dinosaur Mania
Edward Radlauer
Childrens Press, 1979

Baby Dinosaurs
Helen R. Sattler
Lothrop, Lee & Shepard Books, 1984

Ranger Rick's Dinosaur Book
Victor H. Waldrop, Editor
National Wildlife Federation, 1984

Brontosaurus Moves In
R.G. Austin
Archway Paperbacks, 1984

Dinosaurs, Beware!
Marc Brown and Stephen Krensky
Little, Brown & Co., 1982

Home for a Dinosaur
Eileen Curran
Troll Associates, 1985

The Secret Dinosaur
Marilyn Hirsch
Holiday House Inc., 1979

Dinosaur My Darling
Edith T. Hurd
Harper & Row, 1978

If Dinosaurs Were Cats & Dogs
Alice Low
Scholastic, Inc., 1981

If a Dinosaur Came to Dinner
Jane B. Moncure
Child's World Inc., 1978

If the Dinosaurs Came Back
Bernard Most
Harcourt Brace Jovanovich, 1984

Dinosaur Do's and Don'ts
Jean B. Polhamus
Prentice Hall, 1975

"The Dinosaur Who Ate, Among Other Things, a Small Boy"
Polly Fox
From Sounds After Dark by Bill Martin, Jr.
Holt, Rinehart and Winston, Inc., 1974

Thunder the Dinosaur Book (set of 10)
Cypress Publishing Corp, 1977
Available from: Thomas Nelson & Sons

The Dinosaur's Footprint
Starters Stories
Macdonald Educational, n.d.

Dinosaurs
Starters Facts
Macdonald Educational, n.d.

A Dozen Dinosaurs
Richard Armour
McGraw-Hill, 1967

The Warm-Blooded Dinosaurs
Julian May
Holiday House, 1978

Pterodactyls and Old Lace
Methuen Educational Ltd., 1972

The Tyrannosaurus Game
Steven Kroll
Holiday House, 1976

The Foolish Dinosaur Fiasco
Scott Corbett
Little, Brown & Company , 1978

Dinosaurs and All That Rubbish
Michael Foreman
Puffin Books, n.d.

Double Dinomite
Jim Razzi
Simon & Schuster, 1986

Dinosaurs and Their Young
Russell Freedman
Holiday House, 1983

The Terrible Claw: The Story of a Carnivorous Dinosaur
Beverly Halstead
Collins, 1983

The Monsters Who Died: A Mystery About Dinosaurs
Vicki Cobb
Coward-McCann, 1983

The Dinosaur World
Edwin H. Colbert
Stravon Educational Press, 1977

The Dinosaur Dictionary
Donald F. Glut
Citadel Press, 1972

Dictionary of Dinosaurs
Joseph Rosenbloom
Julian Messner, 1980

Digging Up Dinosaurs
Aliki
Thomas Y. Crowell, 1981

Fossils Tell of Long Ago
Aliki
Thomas Y. Crowell, 1972

Hocus Pocus Diplodocus - The Entire History of the Universe in 21 Poems
Tom Stanier
Macdonald Educational, 1980

The following list suggests some reader selections related to the topic "Dinosaurs."

Company	Series	Date	Reader Title	Story Title
Holt, Rinehart & Winston	Impressions	1984	Fly Away Home	Five Enormous Dinosaurs (p. 86)
			West of the Moon	The Hungry Thing (p. 54)
				Dinosaur Time (p. 57)
				Company (p. 60)
Ginn	Journeys	1984	Far Away and Long Ago	Dinosaurs (p. 31)
				Harold and the Dinosaur Mystery (p. 32)
				The Dinosaur's Dinner (p. 40)
				Dessert for a Dinosaur (p. 41)
				Let's Visit the Dinosaurs (p. 46)
				All About Dinosaurs (p. 52)
			Knock at My Door	Pea Soup and Sea Serpents (p. 39)
Gage	Expressways	1977	Leapfrog	Janty (p. 152)

Company	Series	Date	Reader Title	Story Title
Ginn	Starting Points in Reading	1981	Level A-Second Book	Supersaurus (p. 10)
Holt, Rinehart & Winston	Language Patterns	1970	Flights Near and Far	Dinosaurs... They Had Their Day (p. 240)

Miscellaneous

Let's Draw Dinosaurs
Ann Davidow-Goodman
Putnam Pub. Group, 1978

Dinosaurs! A Drawing Book
Michael Emberly
Little, Brown & Co., 1980

Prehistoric Life (overhead transparencies)
Edward Ortleb and Richard Cadice
Milliken Publishing Co., 1968

Dinosaur Dioramas to Cut and Assemble
Matthew Kalmenoff
Dover Pub., Inc., 1983

The Dinosaur Coloring Book
Anthony Rao
Dover Pub., Inc., 1980

Dinosaurs: An Educational Coloring Book
Linda Spizzirri
Spizzirri Publishing Co., 1981

"If I Had a Dinosaur" (song)
Raffi
From: More Singable Songs
Troubadour Records Ltd., 1977

Dinosaur Detective
Beverly Armstrong
The Learning Works, 1979

Edu-Colour Book 701 - Dinosaurs and Later Prehistoric Animals
Royal Ontario Museum, 1977

Dino-Might! (activity book)
Pitman Learning, Inc., 1983
Available from: Copp, Clark, Pitman Ltd.
493 Wellington St., West
Toronto, Ontario M5V 1E9

Dinosaur Dot-to-Dot
American Teaching Aids, n.d.

Walt Disney Study Prints - Animals of the Primeval World, Set #208
Walt Disney Educational Materials

Dinosaur Mobiles (The Make Mobile Series)
Anne Wild
Tarquin Publications, 1981
(May be available from Calgary Zoo Gift Shop)

Mindstretchers: Dino-Might! (Games, puzzles, mazes, etc.)
Pitman Learning, Inc., 1983

Color Pops: Dyno-Daze (pop-up scenes)
Choice Publications Ltd.

Color & Learn: Dinosaurs
Helen Rudin
Playmore, Inc., 1984

Tyrannosaurus (Teaching Unit)
Betty Alexander
Available from: NWTTA Lesson Aids Service

More Dinosaurs! And Other Prehistoric Beasts (A Drawing Book)
Michael Emberley
Little, Brown and Company, 1983

I Can Draw Dinosaurs
Lisa Bonforte
Wanderer Books, 1984

8 1/2 x 4' Dinosaur Poster ($14.95 U.S.)
Creative Teaching Press, Inc.
P.O. Box P-92
Huntington Beach, CA 92647

Giant Inflatable Dinosaur (30" x 54") ($24.95 U.S.)
The Nature Company
Dept. I. P.O. Box 882912
San Francisco, CA 94188

Giant Dinosaur Skeletons (to assemble - $49.95 U.S.)
Edmund Scientific Co.,
Dept. 6101, EE09 EdsCorp Bldg
Barrington, NJ 08007

How To Make Dinosaurs
Eve Barwell
Studio Vista, 1974

Dinosaur Costume (children's sizes)
McCall's Pattern #2749

Stuffed dinosaur toys (Tyrannosaurus, Pteranodon, Stegosaurus and Brontosaurus)
McCall's Pattern #2577 or
McCall's Crafts #817

Available from: Moyer's
25 Milvan Drive
Weston, Ontario
M9I 1Z1

- Plastic Dinosaur Models
- Dinosaur Paper Cut-Outs
- Dinosaur Bulletin Board Kit
- Wooden Dinosaur Puzzles
- Dinosaur Detective Workbook
- Dinosaur Scratch'n Sniff Awards
- Dinosaur Seals
- The Dinosaur Box
- Dinosaur Reward Labels
- Dinosaur Rubber Stamps
- Plastic Dinosaur Templates
- Dinosaur Skeleton Models (wooden and plastic)
- Dinosaur Floor Puzzle

Available from: Western Educational Activities Ltd.
Box 3806, Postal Station D
Edmonton, Alberta T5L 4J8

- Dinosaur Duplicators - Math
  - Alphabet
  - Writing Practice
- Dinosaur Friends Duplicators - Outline Figures
- Dinosaur Friends Album or Cassette
- Dinosaurs & Other Prehistoric Animals - Task Cards

Available from: Scholar's Choice
Box 4214
London, Ontario
N5W 5W3

- Dinosaurs and Spatial Relationships (bulletin board kit)
- Dinosaurs and Prehistorics (bulletin board kit)
- Dinosaur and Prehistoric Time Line (pictoral time line)
- Dinosaurs (full colour chart)
- Dinosaur Rubbys (reward labels)
- Dinosaur Tracing Kit
- Dinosaur Funbook
- Dinosaurs and Other Prehistoric Animals (16 posters)

Dinosaur Dig (computer software)
The Dinosaur Box
Dinosaur Skeleton Models
ABC Dinosaur Train
Dinosaur Floor Puzzle

Available from: Play and Learn
B1 - 116 - 103rd Street
Saskatoon, Saskatchewan
S7N 1Y7

Available from 1986-87 catalogue:

Lace-A-Saurus (lacing kits)
Dinosaur Skeleton Wooden Model Kits (large/medium sizes)
Prehistoric Animals Plastic Templates
Dinosaur Wooden Puzzle
Large floor puzzles - 4 Dinosaurs
Jumbo Dinosaur Alphabet Puzzle
Inlay Dinosaur Puzzle
Dinosaur Scene Floor Puzzle
Advanced Dinosaur Inlay Puzzles
Lauri Foam Rubber Dinosaur Puzzle
Pliable Vinyl Dinosaurs
12" Vinyl Dinosaurs with Swivel Heads
Prehistoric Animals - Wooden Play Figures
Miniature Prehistoric Animals
KGR Teaching Aids - Dinosaurs 1-2
  - Dinosaurs 2-3
  - Dinosaurs 4-6
Frank Schaffer Reproducibles - Dinosaurs K-1
  - Dinosaurs 2-3
Dinosaur Frieze
Dinosaur Poster Set
Dinosaur Friends Colour Chart
Dinosaur Flannelboard Cut-outs
Dinosaur Bulletin Board Aids
Frank Schaffer Dinosaur Bulletin Board Aids
Prehistoric World Poster
Dinosaur Full-Colour Pictures with Teacher's Manual
Proportionately Scaled Dinosaur Cut-outs
Dinosaur Cut-outs
Dinosaur Scratch 'N Sniff Awards
Dinosaur Stickers
Dinosaur Detective
Frank Schaffer Dinosaurs Cut & Paste
Frank Schaffer Learning About Dinosaurs
Dinosaur Friends Duplicating Book
Dinosaur Stand Up Reproducibles

Museums

Write to the museums and shops listed here for information, books and other materials related to dinosaurs.

Tyrell Museum of Palaeontology
Box 7500
Drumheller, Alberta
TOJ OYO

Royal Ontario Museum (Write to: The Little Shop
100 Queen's Park c/o Suzanne Fifi
Toronto, Ontario R.O.M.)
M5S 2C6

Provincial Museum of Alberta
12845 - 102 Avenue
Edmonton, Alberta
T5N 0M6

The Winnipeg Museum of Man and Nature
Winnipeg, Manitoba

Calgary Zoo Gift Shop
Calgary, Alberta

The Clam Shell Gift Shop
Vancouver Aquarium
Vancouver, British Columbia

INITIAL ASSESSMENT ACTIVITIES

The following activities should be done before you teach any of the lessons. They will assist you to determine:

1. what students already know about the concepts of the topic and therefore where instruction should begin;

2. what interests students have in the topic and therefore the direction the unit should take; and

3. what language students already have to discuss the topic and what language they require.

One of the basic principles of the Language Development Approach and of all good teaching is that you should start with the student when planning and carrying out a unit. Before you begin to teach it is important to assess your students' knowledge of and interest in the topic. You should determine what students already know about the topic/concepts you intend to cover. What ideas do students already have? What misconceptions do they have which you must address? What gaps are there in their knowledge which require that you teach certain lessons? What concepts do they know well enough so that you can skip the lessons which teach those concepts? What questions do they have? What relationships do they see between different aspects of the topic?

It is also important to identify what experiences students have which relate to the topic/concepts. By identifying these and building upon them in the lessons you can help students relate the new ideas and information to their own lives. It is important to do this because it assists students to internalize new concepts. It helps students make the concepts part of the conceptual framework which they use to understand and describe their world. If they do not have concrete, firsthand experiences to relate to each concept you will have to provide them wherever possible.

Another use for these activities is to help you identify particular interests of individuals, groups of students, or the whole class. You can then include activities in the lessons which involve student interests, thereby increasing motivation for them to participate and learn. You may decide to add, substitute or omit some lessons because of students' interests.

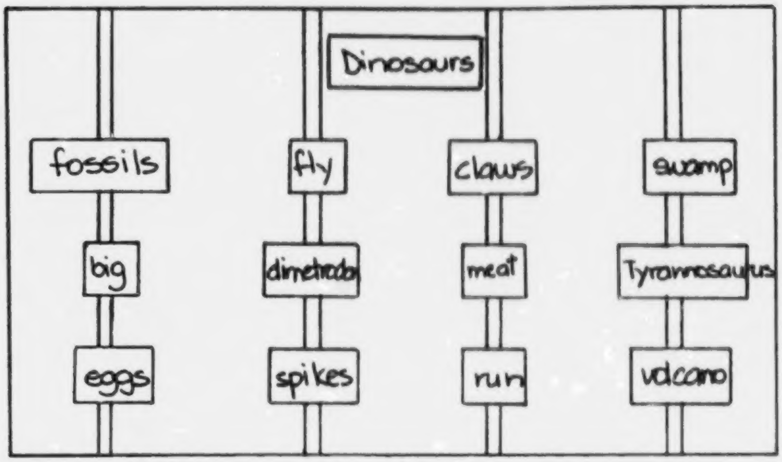
These activities will also help you determine what language students have to discuss the topic. You can find out what vocabulary items students already know and what associations they have for each word. It is important to ascertain the meanings students attach to words; sometimes their interpretations may surprise you! If they do not clearly understand terms or use them incorrectly, it will prevent them from understanding and incorporating the concept into their mental framework.

1. Brainstorming

Set the scene for the Dinosaurs unit by decorating your classroom to resemble a prehistoric scene (see Special Activities box on Activity Ideas Chart - Topic A). Cut out large dinosaur tracks. Use them to make a path leading to your discussion area. Discuss the tracks with students:

What could have made the tracks?
Was it a big creature? (Have students compare their footprints to the the tracks.)
Etc.

Try to elicit the word "dinosaur." If no one does suggest it, show a picture of a dinosaur. Ask students to tell you what they know about dinosaurs. Record their answers on cards and hang them on masking tape strips (sticky surface up) which you fasten to the wall or the chalkboard.


Dinosaurs
fossils
fly
claws
swamp
big
dimetrodon
meat
Tyrannosaurus
eggs
spikes
run
volcano

If students have difficulty with this activity you may wish to direct their thinking or prompt ideas by asking more specific questions:

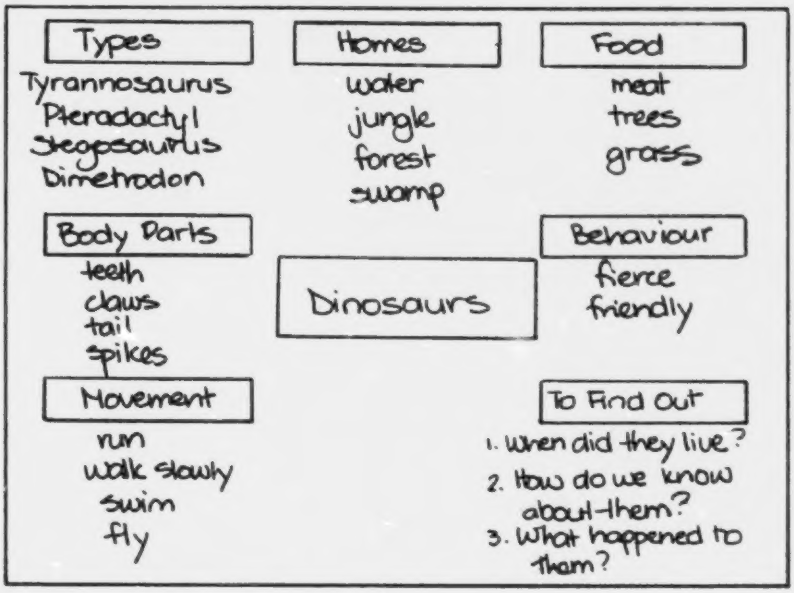
> Are there any dinosaurs alive today? Why not?
> What did dinosaurs eat?
> What do you want to find out about dinosaurs?

Encourage students to predict answers to these questions even if they aren't sure of the exact responses. It might be interesting to record their predictions separately and compare them to the actual answers as you study the unit. Students may think of their own questions as well. Keep a list of all the questions the class cannot answer to focus the lessons you teach during the unit.

After you record their responses on the cards, have students chant the words with you. Talk about the words: Which word is the most interesting? the least interesting? the most puzzling? What other word can you think of that means almost the same thing? What comes to your mind when I say _________? What do you think this word means? Etc.

2. Categorizing:

Distribute the word cards from the brainstorming session. Be sure to tell students the words you give them. Give younger students only one card at a time so they will not get confused. Have one student place his/her word card at the top of one of the masking tape strips and tell the word to the class. Ask if there is anyone else who has a word that belongs with the first word. Have another student place his/her word card under the first, read the word and explain why it belongs with the first word. Give a title to these two cards which now form a category. Ask if anyone can start a new category. When students have placed all of the brainstormed words in categories, discuss the titles and change them if necessary. Chant the words in each category with students. Transfer the words to a flowchart to provide a permanent reference.


Types
Tyrannosaurus
Pteradactyl
Stegosaurus
Dimetrodon
Homes
water
jungle
forest
swamp
Food
meat
trees
grass
Body Parts
teeth
claws
tail
spikes
Dinosaurs
Behaviour
fierce
friendly
Movement
run
walk slowly
swim
fly
To Find Out
1. When did they live?
2. How do we know about them?
3. What happened to them?

As you teach the unit you may wish to add new information to the chart. You may also identify new questions and, hopefully, the answers. At the end of the unit you can review the chart with students. Keep it as a reference for future use.

SAMPLE QUESTIONS

You can use these questions during the initial assessment activity to determine what experiences, language, and knowledge students have about the topic. You can also use the questions for assessing thinking processes throughout the concept development and application phases of each lesson and during the culminating and evaluation activities.

QUESTIONS FOR ASSESSING EXPERIENCE:

1. Have you been in a situation where __________?
2. What do you know about __________?
3. Have you ever seen __________?
4. Have you ever experienced __________?
5. Have you ever been __________?
6. Have you ever done __________?
7. Has something like this ever happened to you?
8. When was the last time you __________?

QUESTIONS FOR ASSESSING LANGUAGE:

1. What do you think these words mean?
2. Can you give me another word that means __________?
3. What comes to your mind when I say __________?
4. Have you heard of the word(s) __________?
5. What words can you think of when I say the word __________?

QUESTIONS FOR ASSESSING THINKING PROCESSES:

Cognitive Memory (details, information)

1. Who.....?
2. What are the facts?

3. What are the most important details?
4. What is the.....?
5. What do you mean by.....?
6. What is your interpretation of what happened? (What do you think happened?)
7. When?
8. Where?

Convergent/Generalizing (getting the main idea)

1. What are the chief points?
2. Given that information, what is the main idea?
3. What is the single most important idea?
4. State the idea in one sentence.
5. Explain __________________.

Structuring/Relating (arranging relationships)

1. Categories: Which group does that belong to?
   How would you classify.....?
   What type would you.....?
2. Comparisons: How are they alike? same? similar? identical?
3. Contrast: How is it different? in opposition to? unlike?
4. Cause and Effect: What will happen if? Why?
   What will happen as a result of?

Divergent/Using/Applying

1. What might happen if __________?
2. If you use that idea, what would it mean for __________?
3. Apply that idea to our (this) situation.
4. What would result if __________?
5. If you were given these facts, what would you do to __________?
6. How would it be different if we used this idea?
7. What could the advantages/benefits be if we applied this idea/process?
8. What do you think the (story/paragraph) will be about?

Evaluation/Judging/Valuing

1. How do you feel about this idea?
2. What is your opinion?
3. What is the best __________?
4. Are you satisfied with that answer/plan?
5. Can this statement be made? Why?
6. Out of all the information, what can be used to prove your point?
7. How would you judge?
8. What is your opinion or conclusion about the product/plan/idea?
9. Why did you think it worked/didn't work?
10. What is fact? What is opinion?

Science/Social Studies

*1. Try to obtain fossil samples. Display them with a magnifying glass.

*2. Make your own fossils with plaster of paris. Hide them in a tray of sand. Use small picks, tweezers, toothbrushes, etc. to "excavate" the fossils.

3. Discuss the ways in which the world was different when there were dinosaurs: climate terrain
vegetation etc.

4. Scientists who specialize in the study of fossils are called "paleontologists." Try to find out what they do, what tools they use, how much education they need, etc. If you are near a museum, find out if there are any paleontologists working there who would be willing to speak to your class.

5. Fingerprints are traces left by humans. Have students rub their fingers on an inkpad, then press them on paper. What do they notice about the fingerprints? (No two people have the same fingerprint.)

Teacher's Notes

These are possible activity ideas for this topic. They can be used in lessons you make up, as enrichment activities, or as learning centre activities. Most can be done in any language. Activities with an * are actually used in the sample lessons which follow. Spaces have been left for you to record your own activity ideas.

Science/Social Studies con't

6. Try to obtain a lizard and create a special habitat for it.
7. Compare pictures of human and dinosaur skeletons. Observe similarities and differences. What would happen if you had no skeleton?

ACTIVITY IDEAS

TOPIC A: WHAT WERE DINOSAURS?

Math

1. Trace around the foot of each student. Have them cut out their "tracks." Arrange them in order from smallest to biggest.

*2. Make time lines of: the school day
a day in your life
the history of your community
prehistoric life
etc.

Language Arts

1. What does the word "dinosaur" mean?
2. Write language experience charts outlining the method used in preparing your own "fossils."
3. Write letters to museums requesting more information about fossils.
4. Teach the song "Them Bones" using appropriate actions. When students can sing it, write it on sentence strips that you can put in the pocket chart as you are singing.

BEST COPY AVAILABLE

Music, Poems, Stories

*1. "Them Bones"
*2. "A reptile's blood is cold..."
3. "Prehistoric"
4. "A Dinosaur"
5. "Long Gone"
6. "Five Enormous Dinosaurs"

Art

*1. Place hands or feet in trays of paint. Make tracks on a length of mural paper.
2. Use cookie dough to make dinosaur footprints.
3. Cut "dinosaur bones" from large pieces of styrofoam. Bury them in the sand pit and have other students excavate them.

Physical Education/Movement

Special Activities

1. Set the scene for the Dinosaur unit by decorating the classroom:
    a) Swamp - Use a toddlers' wading pool surrounded by plants, real or made from cardboard tubes and construction paper.
    b) Trees - Cut large palm tree shapes from paper and tape to walls. Make free standing trees by setting a long piece of dowel (or a broomstick) in a Christmas tree stand. Cut leaves from construction paper and tape to trunk.
    c) Rocks - Round off corners of cardboard boxes and paint, or scrunch up grocery bags and dab with paint.
    d) Volcano - Drape a large cardboard box (refrigerator carton?) with a gray blanket. Have streamers of red, yellow, and orange crepe paper flowing from the top.
   - Blackout the room. Enter room slowly with a flashlight. Scan the room. Have students describe what they see, how they feel, etc.
   - During the course of the unit: When grouping students for particular activities, name the groups after certain dinosaurs. When calling attendance, students can respond with the names of their favourite dinosaur.

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Lesson: What Were Dinosaurs?

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

English Vocabulary (*actually developed in this lesson)

* reptile/s
* cold-blooded
* dry rough skin
* breathe/s fresh air
* leathery-shelled eggs
* snake/s
* lizard/s
* crocodile/s
* names of familiar animals
* turtle/s
* alligators
* names of dinosaurs

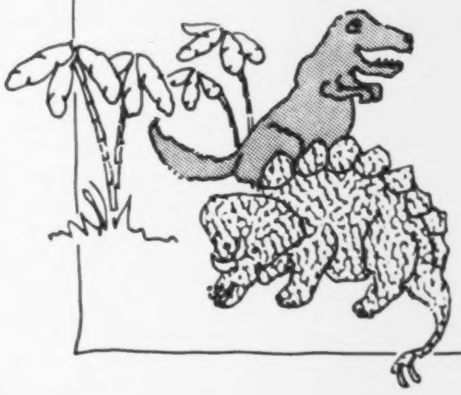
English Sentence Patterns (*actually developed in this lesson)

What is a reptile?
A reptile __________.

* Are __________ reptiles?
* __________ are reptiles.
* __________ aren't reptiles.

Special Materials Required

Pictures of reptiles
Pictures of dinosaurs (Educolour Book 701 - Dinosaurs)
Pictures of familiar animals
Vanishing drill worksheet



Concept Development/Language Exposure

Note to Teachers: In recent years some scientists have suggested that some dinosaurs may in fact have been mammals and not reptiles. For the purpose of this unit, however, no distinction will be made between the various dinosaurs.

1. a) Show students pictures of living kinds of reptiles: lizards, snakes, turtles, crocodiles, alligators, and others. Discuss and explain the ways in which these animals are similar:

> They are cold-blooded. This means that they cannot produce much heat of their own. Reptiles' bodies are covered with scales rather than feathers or fur, so they cannot keep themselves warm. Their temperature is always close to that of their surroundings. When reptiles get cold their movements slow down.
>
> Most reptiles live in warm places.
> They lay leathery-shelled eggs.
> They have dry rough skins.
> They breathe fresh air.

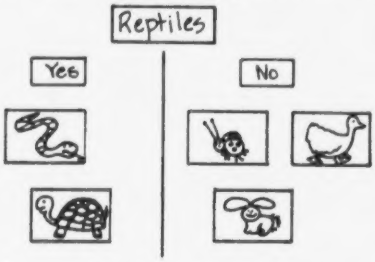
Tell students that animals that have these characteristics are called reptiles. Compare these animals to other familiar animals. For example: Fish are cold-blooded and have scaly skins, but they do not breathe fresh air and do not lay leathery-shelled eggs. Bears breathe fresh air, but they do not have scaly skins, they do not lay eggs, and they are not cold-blooded.

b) Teach students the following rhyme:

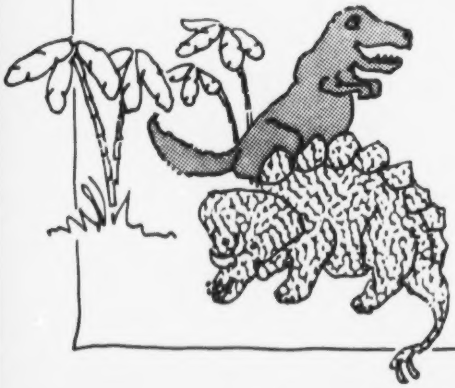
A reptile's blood is cold.
A reptile's skin is scaly.
A reptile's eggs have leathery shells.
(Recite this poem daily.)

From: Hocus Pocus Diplodocus by Tom Stanier

c) Label a pocket chart as shown and sort pictures of various animals (including dinosaurs). Use the sentence patterns as you sort the pictures.



"Are fish reptiles?" "No, fish aren't reptiles."



Language Practice

L 1. Flashlight Game: Tape pictures of animals and reptiles around the classroom. Call out a statement. ("________ are reptiles." or "________ aren't reptiles.") One student shines a flashlight on the appropriate picture.

L 2. Change Game: Students stand in pairs, back-to-back, with elbows interlocked. Teacher makes a statement. ("Caribou are reptiles.") If the statement is false, students must change partners.

L 3. Elimination: Students raise their hands when they hear a word that does not belong in the reptile category.

E.g., Reptiles: snakes, fish, turtles, lizards, bear, whale, alligator.

L/S 4. Substitution Drill: Teacher makes a statement, then provides a word for students to substitute. For example:

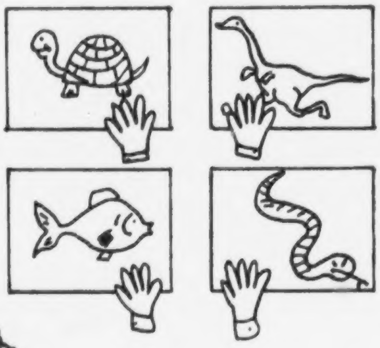
Teacher: "Rattlesnakes are reptiles. Crocodiles."
Students: "Crocodiles are reptiles."

or

Teacher: "Whales aren't reptiles. Caribou."
Students: "Caribou aren't reptiles."

S 5. Bean Bag Toss: Scatter animal pictures on the floor. Give one student a bean bag to toss on one of the pictures. S/he names the animal and decides if it is a reptile, then makes an appropriate statement using the sentence pattern.

S 6. Concentration: Place pictures face down on the floor. A student turns up two pictures and makes statements about each. If they are both reptiles or they are both not reptiles, the student may keep the pair. If one is a reptile and the other is not, the student replaces the pictures face down on the floor.



"Turtles are reptiles. Dinosaurs are reptil
(Keep pictures.)

"Fish aren't reptiles. Snakes are reptile
(Replace pictures.)

S 7. London Bridge: Have two students form a "bridge" with their arms. The other students walk in single file under the bridge as music plays. When the music stops, the "bridge" drops and traps one student. S/he must answer a question posed by the "bridge."

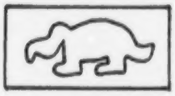
E.g., "Are squirrels reptiles?"
"Squirrels aren't reptiles."

S/R 8. Pocket Chart: Set up the pocket chart as shown.

Are reptiles?

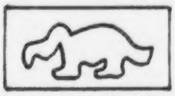
Place one of the animal pictures in the pocket chart and read the question with students.

Are

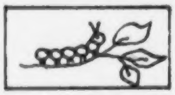


reptiles?

Students respond orally as teacher places the word and picture cards in the chart.



are reptiles. or

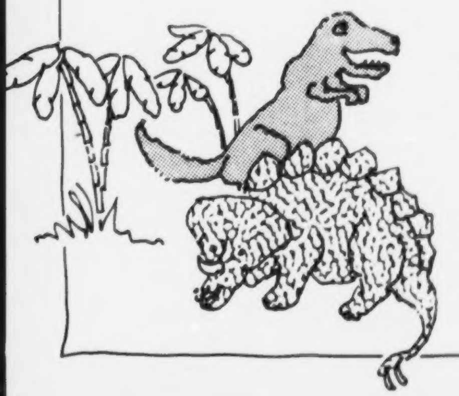


aren't reptiles.

Repeat with many different animals.

Let students take turns acting as teacher.

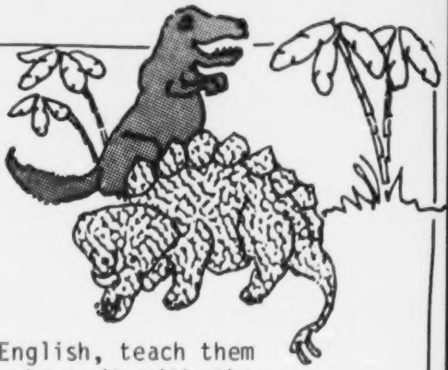
W 9. Vanishing Drill: Provide students with vanishing drill worksheet to be completed individually or in pairs. Do several examples on the overhead projector first.



E.g., Turtles are reptiles.
__________ are reptiles.
__________ are __________.

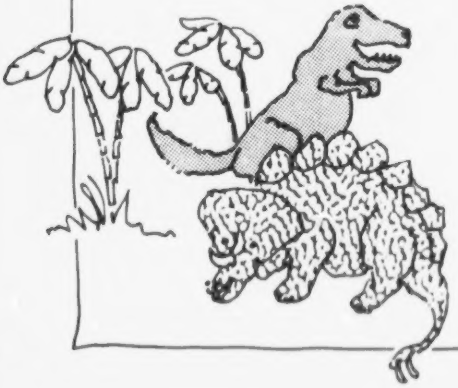
OR

Bears aren't reptiles.
__________ aren't reptiles.
__________ aren't __________.
__________ __________ __________.



Application

1. Make a reptile collage: Cut out pictures from nature magazines or have students draw their own.
2. Are there any reptiles that live in your community? Why? Why not?
3. If you have students who are very proficient in English, teach them the poem "Prehistoric" (p. 133) and have them share it with the class. They might want to use pictures of dinosaurs to illustrate various lines.



Lesson: When Did Dinosaurs Live?

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

English Vocabulary (*actually developed in this lesson)

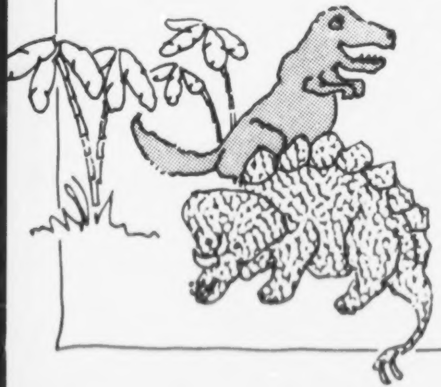
* yesterday
* last year
* a long time ago
* millions of years ago
* last week
* before people were on the earth

English Sentence Patterns (*actually developed in this lesson)

* When did dinosaurs live?
* Dinosaurs lived __________.

Special Materials Required

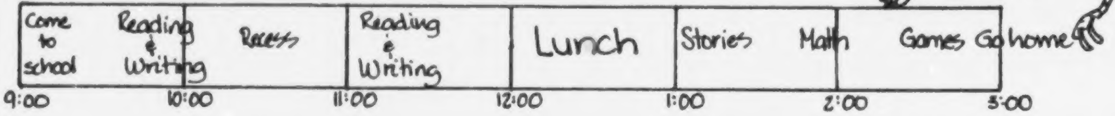
Calendar
Worksheet - When Did Dinosaurs Live?



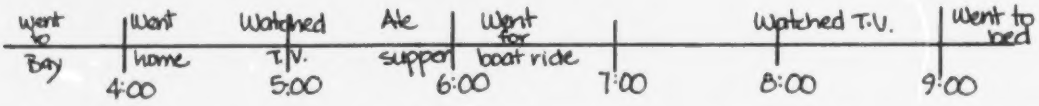
Concept Development/Language Exposure

1. Begin to develop a concept of passage of time by making pictorial time lines with students:

   a) Chart the events of a school day with the whole class.


Come to school
Reading & Writing
Recess
Reading & Writing
Lunch
Stories
Math
Games
Go home
9:00
10:00
11:00
12:00
1:00
2:00
3:00

   b) Have each student chart his/her after school activities for a particular day.


went to Bay
Went home
Watched T.V.
Ate supper
Went for boat ride
Watched T.V.
Went to bed
4:00
5:00
6:00
7:00
8:00
9:00

   c) Make a time line of one year by cutting a calendar into weekly strips and pasting them together end to end. Mark major events (community activities, holidays, birthdays, etc.) on the time line.

MAY						JUNE						
Sat.	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Mon.	Tues.	Wed.	
26	27	28	29	30	31	1	2	3	4	5	6	

Encourage students to use words and phrases relating to time (yesterday, last week, a long time ago, etc.) as you do these activities.

2. Talk with students about things that happened a long time ago (e.g., before they were born, when their grandparents were young, etc.). Tell them that dinosaurs lived long before any of these events; when dinosaurs lived there were no people at all living on the earth. Dinosaurs lived millions of years ago. Nobody has ever seen a dinosaur because they had all disappeared by the time that there were people living on the earth.

Make a time line that includes prehistoric time up to the present day. Mark major events on it - when dinosaurs first appeared, when dinosaurs disappeared, when humans appeared, when the first car was made, when men walked on the moon, etc.

Language Practice

L 1. True or False: Ask questions of your C.A. (or use a dinosaur puppet). Students indicate by a physical action if the response is true or false. For example:

Teacher: "When did dinosaurs live?"
C.A.: "Dinosaurs lived a long time ago."
(Students do action.)

Teacher: "When did dinosaurs live?"
C.A.: "Dinosaurs lived last week."
(Students remain still.)

L 2. Run Around: Students run around their chairs and sit down again when they hear a previously specified sentence.

Teacher: Run around your chair when you hear "Dinosaurs lived millions of years ago."

Dinosaurs lived last week; dinosaurs lived long ago; dinosaurs lived millions of years ago (students change); etc.

L/S 3. Gossip: Teacher begins by whispering a statement to the first student. That student whispers it to the next student and so on until it has been whispered to all of the students. The last student repeats the statement aloud.

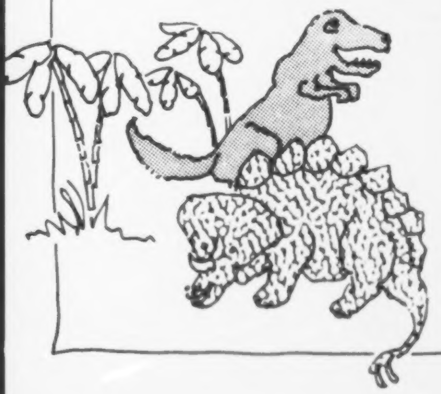
L/S 4. Substitution Drill: Teacher makes a statement, then provides a phrase for students to substitute. For example:

Teacher: "Dinosaurs lived long ago. Before humans lived on the earth."
Students: "Dinosaurs lived before humans lived on the earth."

S/R 5. True or False: Have students dictate true statements about when dinosaurs lived. Record these on sentence strips. Write false statements on sentence strips. Place all the strips together in the pocket chart. Read them with students and have them identify the false statements.

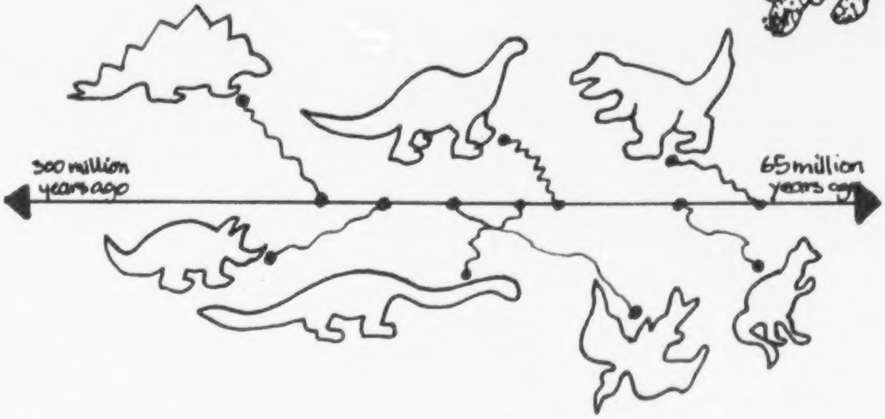
R 6. Balloon Toss: Write the statements from Activity #5 on long balloons. Toss them up in the air and have students attempt to catch them. Students read the statements on the balloons they catch and decide if they are true or false. Pop the balloons with false statements.

R/W 7. Worksheet: Provide each student with a copy of the worksheet "When Did Dinosaurs Live?". Have them complete the statements with true endings.



Application

1. Make a prehistoric time line. Place cutouts of various dinosaurs around the time line. Mark their places on the time line with yarn.

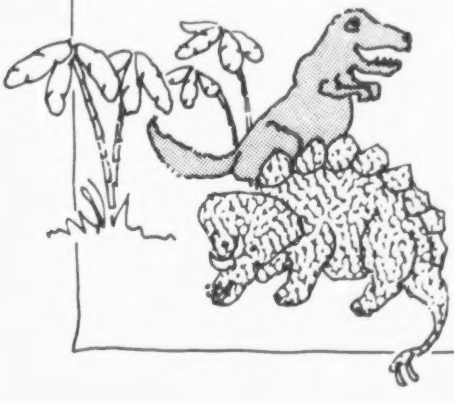


2. Make a community time line that shows important happenings in the history of your community.

1979	1980	1981	1982	1983	1984	1985	1986	1987
					↓ new school opens		↓ becomes hamlet	

3. Divide the class into groups. Assign each group a poem to illustrate or dramatize for the rest of the class. Selections could include:

A Dinosaur p. 124
Long Gone p. 136
Five Enormous Dinosaurs p. 134



Lesson: How Do We Know About Dinosaurs?

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

English Vocabulary (*actually developed in this lesson)

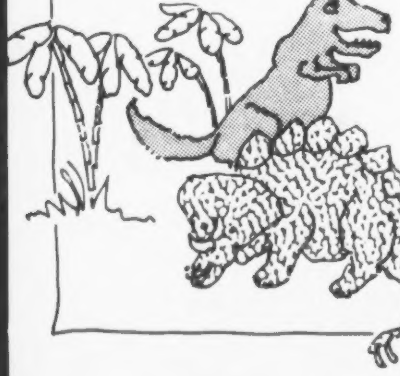
* fossil/s
* nest/s
* track/s
* trace/s
* web/s
* dropping/s
* dead
* feather/s
* bone/s
* shell/s
* fur

English Sentence Patterns (*actually developed in this lesson)

* _________ are traces left by _________.

Special Materials Required

Fossil specimens (or photographs of fossils)
Filmstrip: Fossils - Traces of the Past
Plaster of paris, pails or pans, shallow containers
Pictures of traces left by living things (nests, eggs, beaver dams, etc.)
Vanishing drill worksheet

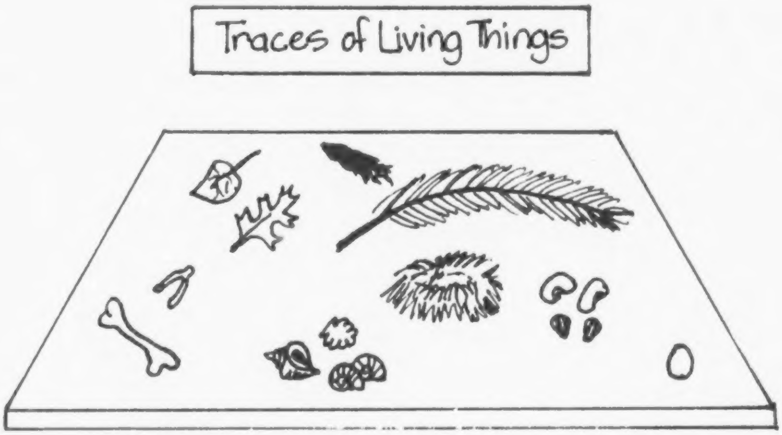


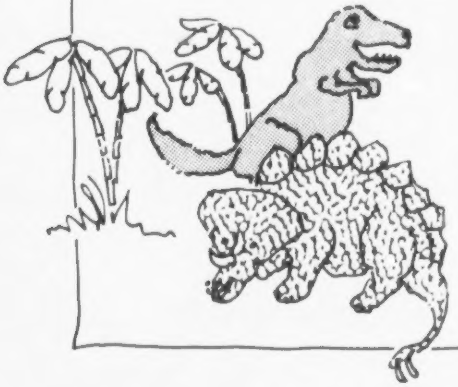
Concept Development/Language Exposure

1. a) Before students come to school in the morning or the afternoon, have a visitor (the principal, a parent or community member) come to the classroom and leave traces of his/her visit. The signs could be easily identified with that person: jacket, mitts, boots, picture, etc. if you want students to identify the visitor. Other signs could be anonymous: overturned wastebasket, writing on the blackboard, an open window, etc. Have students find and list all the traces their visitor left. Help students try to identify the mystery guest. Be sure students understand that they know someone was there because of the signs left, even if they're not sure who it was.

   b) Go for a walk to find traces of living things. Look for tracks, feathers, bones, shells, partially eaten plants, bits of fur, droppings, nests, spider webs, etc. Take pictures of the things you see or collect actual specimens. Discuss each item that you found: What left the trace? What can we learn about the living thing by examining the trace/s left by it? (E.g., We may be able to estimate its size, determine its colour, learn about what it eats, etc.) Even though we may never see the living thing, we can learn many things about it by examining the traces it left behind.

   Make a display of your findings:





Model the sentence pattern as you point to each item. For example, "Feathers are traces left by ravens."

2. Brainstorm with students as many traces of living things as they can. Model each brainstormed item in the sentence pattern, for example: "Webs are traces left by spiders." Record the lists on chart paper. Discuss the kinds of information that can be learned from each trace.

Traces of Birds
nests
eggs
feathers
bones
tracks

Traces of Spiders
webs
eggs

3. a) Ask students if anybody saw a dinosaur on their way to school today. Why not? How do we know that dinosaurs did live on the earth if nobody has ever seen one? (Remind students that we learned about living things that we had never seen by looking at their traces.) The traces left by dinosaurs are given a special name - fossils. Has anybody ever seen a fossil? If possible show students fossil specimens or photographs of fossils. Point out that a fossil can be a whole animal, a bone, an egg, a tooth, a footprint, or even the outline of a leaf. Model the sentence pattern, for example: Bones are traces left by dinosaurs.

   b) View and discuss the filmstrip Fossils - Traces of the Past (National Geographic Society).

4. a) Discuss with students the way in which most fossils were formed (i.e., by being buried in sediment). Divide the class into small groups to recreate this in the classroom:

   Find an old dishpan or pail. Fill it with mud, a little at a time. Keep adding water and stirring until the mud is like thick soup. From time to time, drop small objects (shells, chicken or fish bones, a leaf, a feather, etc.) into the mud. When the mud is about 10 cm deep, remove the excess water with a dipper. Place the pail in a warm place and let the mud dry out for several days. When the mud is dry and hard, break it apart and look for the "fossils" in it. Remember to look not only for the objects but also for the impressions left by them.

   b) Sometimes fossils give us a complete "picture" of what something looked like in the past. At other times, bits of fossils can be put together (like jigsaw puzzles) to make a model of something that lived in the past. Make models of these two kinds of fossils:

i) Mix some plaster of paris with a little water to make a thick paste. Pour the paste into a shallow container. Place a small object, such as a key, on top of the plaster. When the plaster has hardened, remove the object. What remains is the model. Have a mystery model contest to see who can identify the most kinds of models that were made.

ii) Repeat the procedure outlined above, but use larger objects. When models are complete, break them into several pieces. Have students try to reconstruct the models and guess what the original objects were.

c) Most of the information that we have about dinosaurs came from bits of fossils that scientists put together. Bones were put together to make skeletons of the various dinosaurs. Artists would then draw pictures of what they thought the outside of the dinosaurs looked like. Show students various skulls or pictures of skeletons and have them draw pictures of what they think the animal looked like.

d) Use the sentence pattern to review the traces left by dinosaurs:

Footprints are traces left by dinosaurs.
Bones are traces left by dinosaurs.
Teeth are traces left by dinosaurs.
Eggs are traces left by dinosaurs.
Etc.

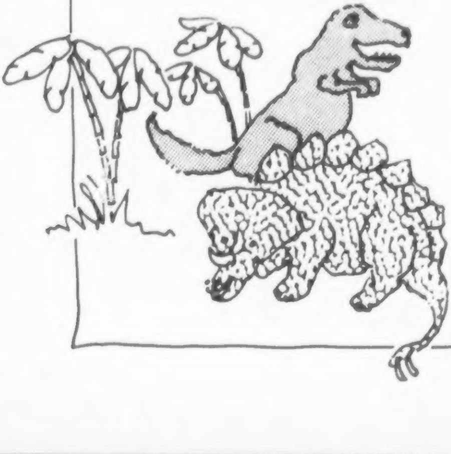
Language Practice

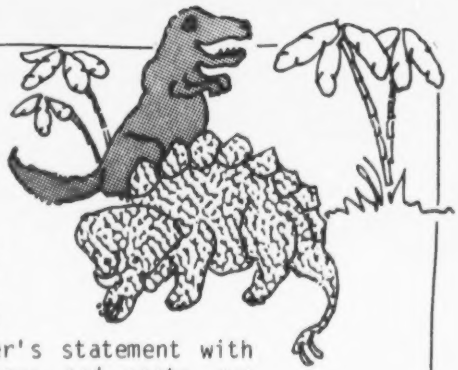
L 1. Elimination: Tell students that you are going to call out a list of traces that may be left by a certain animal. If they hear you say a word that does not belong to the list, they should clap their hands. For example:

Teacher: "Traces left by a bird: nest, feather, web, eggs."
Students should clap their hands when they hear the word "web."

L 2. Merry-Go-Round: As students march around chairs (one less than there are students) teacher makes statements. If teacher makes a false statement, students try to get a seat. If students sit down when a statement is true they are eliminated. Play continues until one player gets the last seat.

L/S 3. Substitution Drill: Teacher makes a statement, then provides a word for students to substitute. For example:





Teacher: "Bones are traces left by
dinosaurs. Footprints."
Students: "Footprints are traces left by
dinosaurs."

L/S 4. Cumulative Chain Drill: Teacher and a small group of students sit in a circle. Teacher begins by making a statement, for example: "Feathers are traces left by birds." First student must repeat teacher's statement with another item added, for example: "Feathers and nests are traces left by birds." Continue until all students have had a turn or until you cannot think of any more items to add. Then change to another animal and continue.

S/R 5 a) Pocket Chart: Refer to the lists developed in CD#2. Record the items listed on cards, and make up sentence strips.

______ are traces left by ______.

Place word cards and sentence strips in the pocket chart as you chant with students:

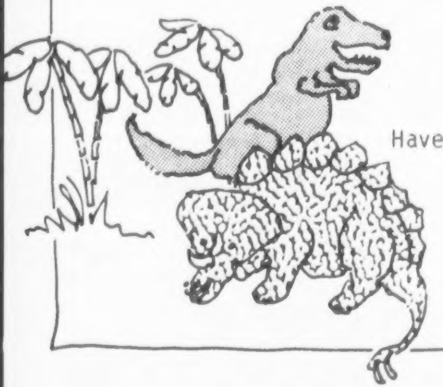
Bones	are traces left by	dinosaurs.
Eggs	are traces left by	dinosaurs.
Tracks	are traces left by	dinosaurs.

Repeat with other animals discussed in CD#2.

R b) Scavenger Hunt: Copy the statements from activity 5a) onto smaller cards and hide them around the classroom. Divide class into teams of four. Assign one of the animals to each group. They must search the classroom to find as many statements that describe their animals as possible. For example, the group that are assigned "birds" would collect the following sentence cards:

Eggs are traces left by birds.
Feathers are traces left by birds.
Nests are traces left by birds.
Tracks are traces left by birds.
Droppings are traces left by birds.
Bones are traces left by birds.

Have each group read their sentences to the class.



6. Vanishing Drill Worksheet: Do an example on the overhead projector before having students complete them individually.

Bones are traces left by dinosaurs.
Claws are ______ left by ______.
______ are ______ left by ______.
______ are ______ ______ ______.
______ ______ ______ ______ ______

Application

1. Take students to an open area. Provide each with a hula hoop (or other ring of a similar size). Students toss the hoops onto the ground and try to find as many traces left by living things, within the hoop, as they can. Students discuss and compare afterwards what they found.

2. Ask each student to find out at least one way traces left by living things are important in our daily lives. They could ask parents or other relatives, observe life at home, etc. Make a list/display of the different ideas:

   People know where to set traps or snares by observing tracks.
   We use bones and teeth from various animals to make things.
   Etc.

3. Go on a fossil expedition. Talk to people in your community to find out where to look. Try to identify any fossils that you find. Start a fossil collection. Display them in egg cartons covered with plastic wrap.

4. Draw replicas of dinosaur bones on brown butcher paper and hide them around the classroom. Have students go on a fossil hunt. When they find bones, they should bring them to a central area. When everyone returns from the hunt, display the findings.

5. Tell students that fossils are more in evidence around us than most people realize. For instance, coal is the remains of plants that lived millions of years ago. Amber, used for making jewellery, is the fossilized remains of residue from trees and often contains preserved insects. Chalk, oil and many other substances are the remains of plants and animals that lived millions of years ago. Try to locate actual samples or photographs of these substances to make a display.

6. Traces of You: Make handprints (or footprints) of all students in the class on a sheet of mural paper. Discuss other traces that humans leave.

Science/Social Studies

1. Sort dinosaurs according to different characteristics: spikes/no spikes, claws/no claws, big/small, long neck/short neck.
2. Put plastic models of dinosaurs in a bag. Blindfolded student chooses one model, feels it and tries to guess which dinosaur it is.

Teacher's Notes

These are possible activity ideas for this topic. They can be used in lessons you make up, as enrichment activities, or as learning centre activities. Most can be done in any language. Activities with an * are actually used in the sample lessons which follow. Spaces have been left for you to record your own activity ideas.

ACTIVITY IDEAS

TOPIC B: TYPES OF DINOSAURS

Math

*1. Mark out the lengths of various dinosaurs on the playground. See how many students can lie down to match the length.
2. Make vertical graphs of dinosaur heights and horizontal graphs of dinosaur masses.
*3. Compare students' heights and masses to those of dinosaurs. Relate the dinosaurs' sizes to the school, a truck, etc.
4. Make dot-to-dot pictures of the various dinosaurs.

Language Arts

1. Who Am I? Each player chooses a picture of one dinosaur and gives one or two clues to the other players. The player who guesses the correct dinosaur gets to keep the picture. The player with the most pictures wins the game.
2. Write statements about dinosaurs using frame sentences:
   A dinosaur is as big as a __________.
   A dinosaur will/will not fit into a __________.
   A dinosaur weighs more than __________.
   A dinosaur eats as much as __________.
3. Write and illustrate comic strips about dinosaurs.
4. Arrange a list of dinosaur names in alphabetical order.
5. Write similes using dinosaur names: As fierce as Tyrannosaurus
   As clumsy as... As tall as...
6. How many words can you make from the letters in Tyrannosaurus Rex?
7. Do echo clapping: di-no-saur, steg-o-sau-rus, etc.

Music, Poems, Stories

1. "What is Big?"
2. "I'm Building a Trap"
3. "The Dinosaur Walk"
4. "Torontosaurus Rex"
5. "Thunder Lizard, Brontosaurus"
6. "The Dinosaur Was Big"
7. "The Dinosaurs"
8. "Prehistoric"
9. "The Prehistoric Animal Brigade"
10. Dinosaur Twins
*11. "Dinosaurs Come in All Sizes"
*12. "A Swamp Romp"
13. "If A Giant Dinosaur"

Art

1. Make lace-a-shape dinosaurs.
*2. Use the overhead projector to make large pictures of the dinosaurs to decorate the room.
*3. Make clay, papier mache, or plasticene models of the various dinosaurs.
4. Cut the outline of a dinosaur from a large sheet of cardboard and place it on a sturdy base. Paint the dinosaur and add appropriate details.
5. Make pipecleaner dinosaur skeletons.
6. Draw two enlarged shapes of a dinosaur, cut them out, staple together, and stuff with newspaper. Paint the dinosaur and hang it from the ceiling.
7. Make dinosaur mobiles.

Physical Education/Movement

*1. Move as you think dinosaurs may have moved.
2. Have a group of students form a dinosaur. Is it difficult to coordinate such a large body?
3. Catch the dinosaur's tail: Players form a line, one behind the other, and hold onto the waist of the player in front of them. (This makes the dinosaur.) The first player is the dinosaur's head, the middle players are its body, and the last player is the dinosaur's tail. The object of the game is for the head to catch the tail. The entire dinosaur must remain intact while the tail tries to avoid the head. Have students make dinosaur noises as they move around.

Special Activities

1. Design a dinosaur. Tell about what he ate, where he lived, how big he was, etc. Give him a name.
2. Make shadow puppets of the various dinosaurs. Write and perform a play for other students in your school.
3. Make up "legends" about the various dinosaurs. E.g., How Stegosaurus Got His Spiked Tail.
4. Make large dinosaur models. Make the basic shape from chicken wire. Cover with brightly coloured tissue paper and paste (tissue papier mache).

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Lesson: Dinosaurs Come In All Sizes

As this lesson emphasizes language related to a poem, you may wish to teach it during your Language Arts period.

English Vocabulary (*actually developed in this lesson)

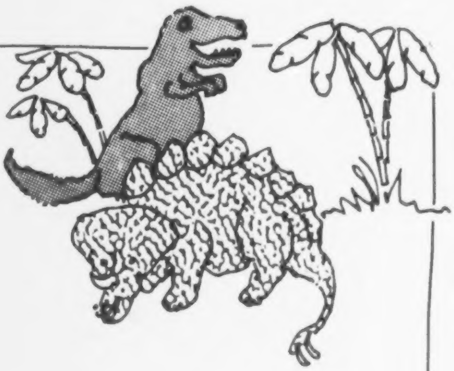
* big/small
* fat/thin
* short/tall
other antonyms related to size

English Sentence Patterns (*actually developed in this lesson)

* Some are _________ and some are _________.

Special Materials Required

Pictures of dinosaurs
Worksheet - Vanishing Drill



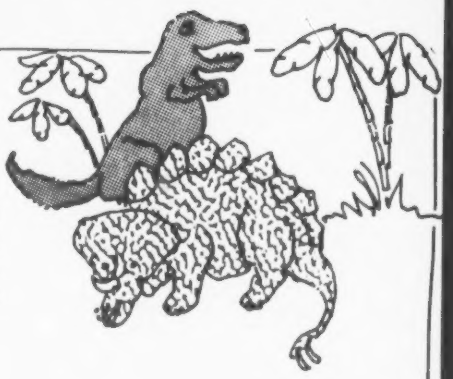
Dinosaurs Come in All Sizes

Adaptation of "Monsters Come In All Sizes"
From Whole Language Sourcebook
By Jane Baskwill and Paulette Whitman
Scholastic-TAB Publications, Ltd., 1986

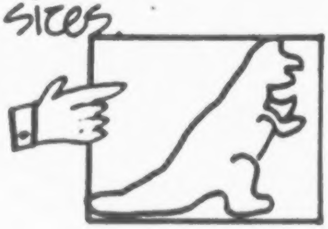
Dinosaurs come in all sizes,
Some are big and some are small,
Some are fat and some are thin,
Some are short and some are tall,
Dinosaurs come in all sizes,
They come any way at all.

Concept Development/Language Exposure

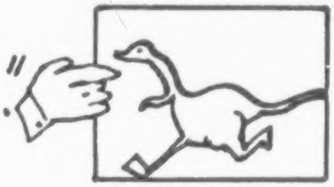
1. a) Select pictures of dinosaurs to fit the descriptions in the poem (i.e., one that is big; one that is fat; etc.). As you recite the poem, place the pictures in a pocket chart or hang them on a clothesline. Repeat the poem a few times. Refer to the pictures each time.



"Dinosaurs come in all sizes.
Some are big,

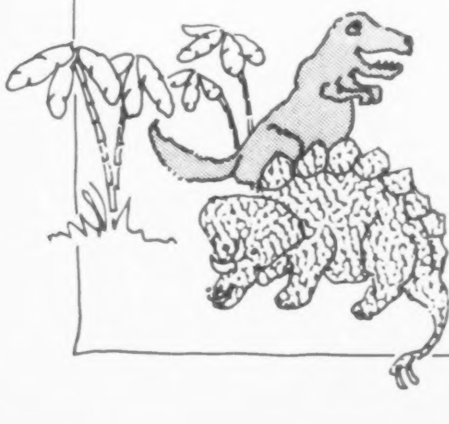


and some are small."

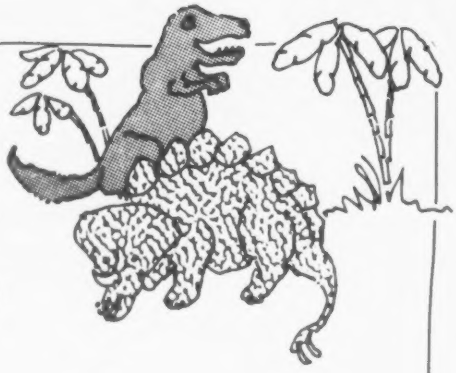


b) Hold up one of the pictures and make a statement about it, for example: "Dinosaurs come in all sizes. Some are short." Ask students to point to the picture that is the opposite of this one. Model the sentence pattern: "Dinosaurs come in all sizes. Some are short and some are tall." Repeat this with the other pairs.

Language Practice



L 1. Which Picture?: Distribute the dinosaur pictures to students. As you recite the poem, have students hold up the appropriate pictures. Repeat the activity until all students have had a turn to hold up one of the pictures.



L 2. Same/Different: Tell students to listen for a particular word. Each time they hear it (in a list of words or a short story) they make a dinosaur noise. For example: "Listen for the word tall: tell, wall, tall, till, ball, tale, etc."

L/S 3. Opposites: Teacher calls out a word from the poem. Students call out its antonym. For example:

Teacher: "Short"
Students: "Tall"

S 4. Choral Speaking:

All: "Dinosaurs come in all sizes,"
Group 1: "Some are big and some are small,"
Group 2: "Some are fat and some are thin,"
Group 3: "Some are short and some are tall,"
All: "Dinosaurs come in all sizes,
They come any way at all."

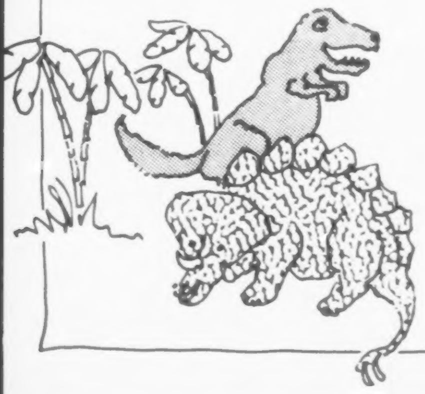
Record the poem and place it in the Listening Centre.

S 5. Charades: Have a small group decide which sentence they would like to act out. Allow them a few minutes to practice the actions. (They may use only body movements to act out the sentence.) The rest of the students must attempt to guess the sentence that is being dramatized.

S/R 6. Pocket Chart:

a) Build the poem in a pocket chart as you chant it:

Dinosaurs come in all sizes
Some are big and some are small
Some are fat and some are thin
Some are short and some are tall
Dinosaurs come in all sizes
They come any way at all.



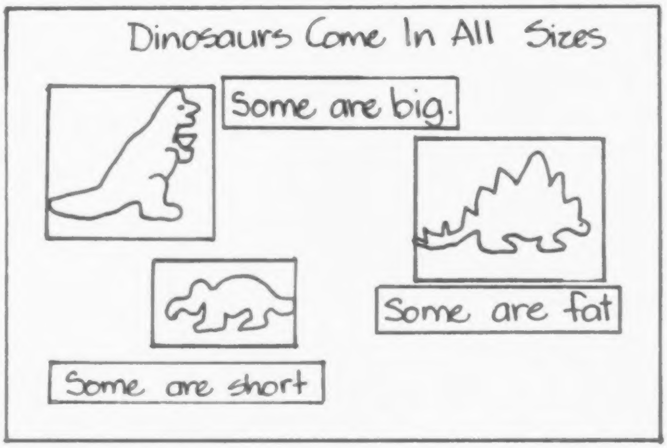
b) Remove key words and distribute them to students. As you chant the poem with the class, have students replace the words in their correct positions.

R 7. Word Detective: Write the vocabulary items on the board. Read them with students. Have students close their eyes. Erase one of the words. Students call out the missing word.

R/W 8. Vanishing Drill: Write the poem on an overhead leaving out words. Have individual students come up to fill in the blanks. Allow students to refer to written copies of the poem. Later this activity may be done on individual worksheets or as illustrated booklets.

Application

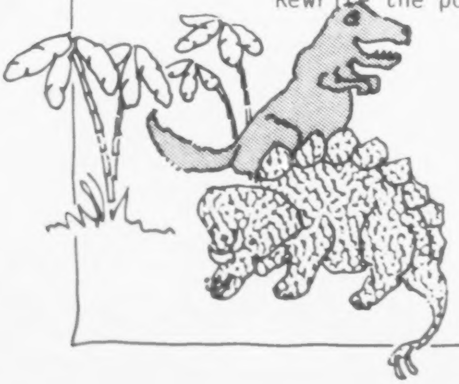
1. Make a bulletin board illustrating the poem:

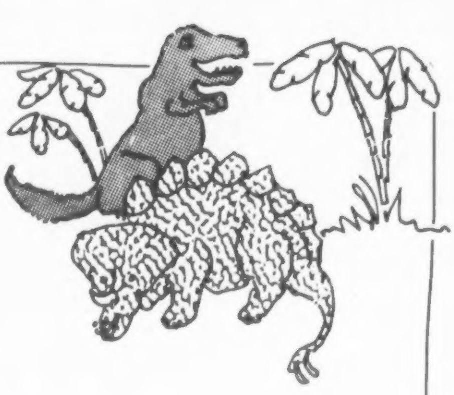


2. a) Make lists of synonyms for each vocabulary item, for example:

BIG - large, huge, enormous, gigantic, etc.

Rewrite the poem, substituting some of these words.



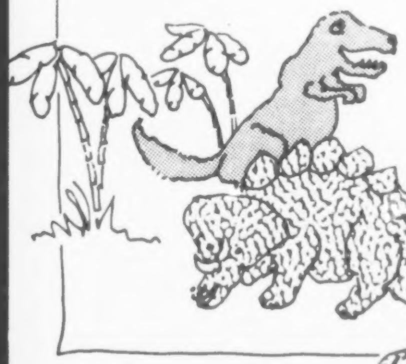


b) Divide the class into groups. Have each group choose another topic and use the poem as a model to write about that topic. Share the results. For example:

People come in all sizes,
Some are large and some are small,
Some are thick and some are thin,
Some are tiny and some are tall,
People come in all sizes,
They come any way at all.

or

People come in all colours,
Some are black and some are white,
Some are brown and some are yellow,
Some are dark and some are light,
People come in all colours,
They come any way at all.



Lesson: Types of Dinosaurs

As this lesson emphasizes language related to science concepts, you may wish to to teach it during your Science period.

English Vocabulary (*actually developed in this lesson)

- * Tyrannosaurus Rex
- * Stegosaurus
- * Apatosaurus (Brontosaurus)
- * Pteranodon
- * Dimetrodon
- * Triceratops

(You may choose other dinosaurs instead of, or in addition to, those listed here. Please note also that Pteranodon is actually a Pterosaur, but for the purposes of this unit we will include it with the dinosaurs.)

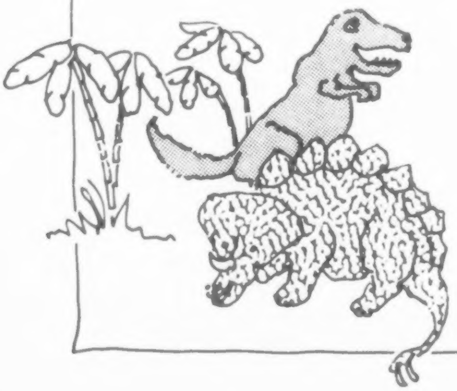
English Sentence Patterns (*actually developed in this lesson)

Which dinosaur is your favourite?
__________ is my favourite dinosaur.

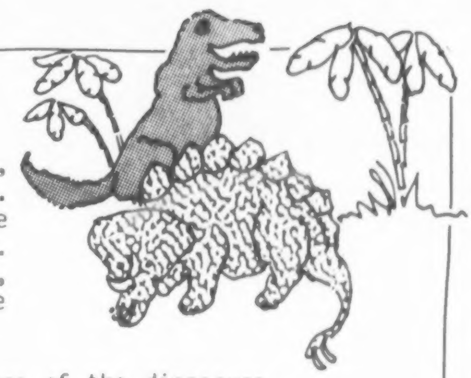
What is this/that dinosaur called?
This/That dinosaur is called __________.

Special Materials Required

Dinosaur pictures
Plastic dinosaur models
Filmstrip/s
Dinosaur puzzles
Dinosaur dominoes
"D-I-N-O-S" cards (Bingo cards)
"Old Maidosaurus" cards
Worksheet: Scrambled Dinosaurs



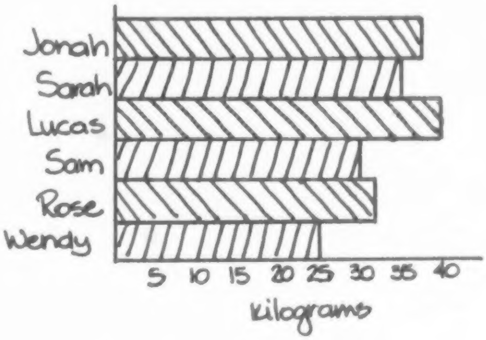
Concept Development/Language Exposure

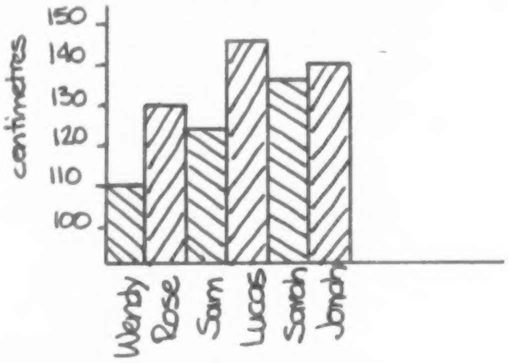


1. a) Introduce the six dinosaurs using pictures, plastic models, filmstrips, puzzles, etc. Have students try to describe the characteristics of each dinosaur. Introduce new adjectives such as bony, spiked, scaly, etc. that students can use to describe the dinosaurs.

   b) Divide class into six groups and assign one of the dinosaurs to each group. Provide them with books which include more information about their dinosaurs. Have them make models of the dinosaurs: they could make 3-D models from papier mache or plasticene; they could use the overhead or opaque projector to enlarge outline drawings of the dinosaurs which they could decorate and paint.

2. a) To give students a feeling for the size of the dinosaurs, have each student record his/her height and mass on two graphs.

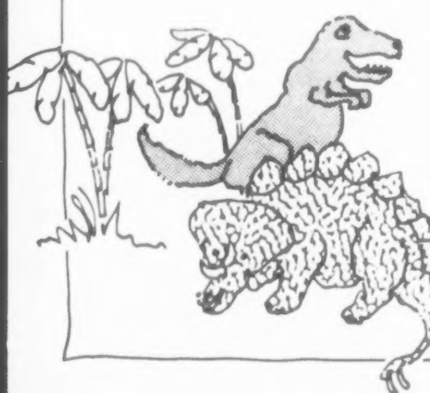




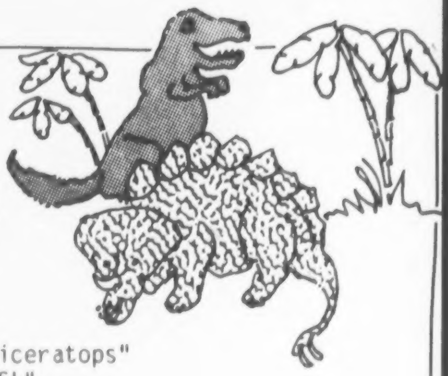
   b) Encourage students to make conjectures about the height, length, or mass of the various dinosaurs relative to their own statistics. For example, how many students' heights would it take to measure the length of Apatosaurus? Have students then lie head to head on the floor or playground until they equal 2100 cm (the approximate length of Apatosaurus).

   c) Parallel the same activities for mass. For example, how many students would it take to obtain a mass close to that of the Apatosaurus?

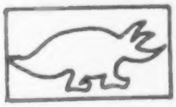
   d) After the students have completed their findings for each of the dinosaurs, help them make a book expressing their findings. For example, "The Apatosaurus is 2100 cm long. John, Sarah, Susan, James, Anna, and Simon's heights together are almost the same length as Apatosaurus." Have students illustrate the book.



Language Practice



L 1. True/False: Instruct students to signal YES or NO when you hold up a picture and say the name of one of the dinosaurs. For example,



Teacher: "Triceratops"
Students: "YES!"

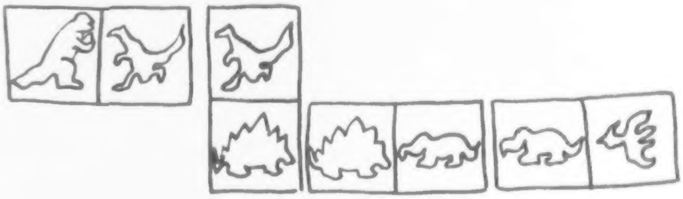
L 2. Stand Up: Divide the class into six groups and assign one dinosaur to each. When a group hears its dinosaur name in a list of other names, all members of that group stand up.

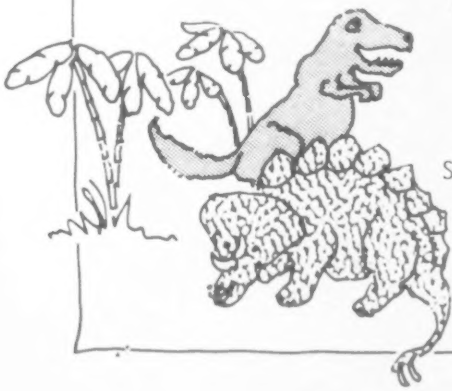
L 3. Here, There and Everywhere: Place large outline figures of the dinosaurs on the walls around the classroom. Call out the name of one of the dinosaurs and the name of one or two students. They must run to the correct dinosaur.

L/S 4. Parrots: Hold up one of the dinosaur pictures and say one of the dinosaur names. If the picture and the name match, students repeat the name. If they are different, students say nothing.

S 5. Name the Dinosaur: Seat students in a circle. Place plastic dinosaur models in a paper bag and pass it around the circle. On a signal from the teacher, the student holding the bag withdraws one of the dinosaurs and names it.

S 6. Dinosaur Dominoes: Have students assist you in making a set of dinosaur dominoes. (Glue dinosaur silhouettes/dinosaur stickers to cardboard dominoes OR cut domino-sized woodblocks and mark with rubber dinosaur stamps.) Distribute dominoes evenly to players. First player begins by laying one of his/her dominoes on the table. Next player must try to match one of his/her dominoes to it. If s/he cannot, play passes to the next player. Continue in this way until one player has placed all of his/her dominoes. Students should identify the dinosaur they are placing if possible.





S 7. Old Maidosaurus: Draw or paste pictures of dinosaurs on file cards. Be sure to make two cards for each dinosaur. Fix one card to look like the "Old Maidosaurus." (Draw gray hair,

spectacles, and a kerchief on a gentle dinosaur such as Diplodocus.) To play: Deal all the cards to 3-6 players. Each player puts any pairs from his/her hand face down on the table. The first player then holds his/her cards out to the player on the left (without letting anyone see what they are). That player then takes one of the first player's cards and looks to see whether it matches any of the others s/he is holding. If there is a match, that pair is laid face down on the table and the player holds out his/her cards to the next player. All the players do this in turn, going around the table, until all the cards have been matched as pairs except for the "Old Maidosaurus." The player left holding the "Old Maidosaurus" becomes the dealer for the next game.

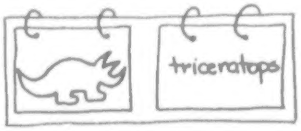
Later students can play this game as a reading game. Write the names of the dinosaurs on the cards in place of the pictures.

S 8. Ball Roll: Seat students in a circle. Sit in the centre with a ball. Roll the ball to one student and call out one of the dinosaur names. The student repeats the name and states one fact about that dinosaur, then rolls the ball back to the teacher. Other students listen to make sure the fact is correct.

S/R 9. Wax Resist: Paint the vocabulary items on a large sheet of paper with wax. Hold up a picture of one of the dinosaurs and have students identify it. Paint over that word with dark coloured paint and it will "magically" appear. Read the words with students. Point to a word and have students read it. Call out a word and have students point to it.

R 10. Dinosaur Bingo: Write the names of the dinosaurs in the spaces on BINGO-type cards. Print one of the letters D-I-N-O-S above each row of spaces. Provide each student with a card and several chips to use as markers. Hold up an outline of one of the dinosaurs and call out the row. (Do not say the name of the dinosaur.) Students must first identify the dinosaur, then look for its name in the row specified. If the name appears in the correct row on their cards, they may place a marker over it. Continue the game until all the dinosaur outlines have been shown, or until a student fills a row of dinosaur names in any direction.

R 11. Flip Chart Match: Prepare a flip chart with dinosaur pictures on one side and their names on the other as shown:



Students match the correct names to the pictures.

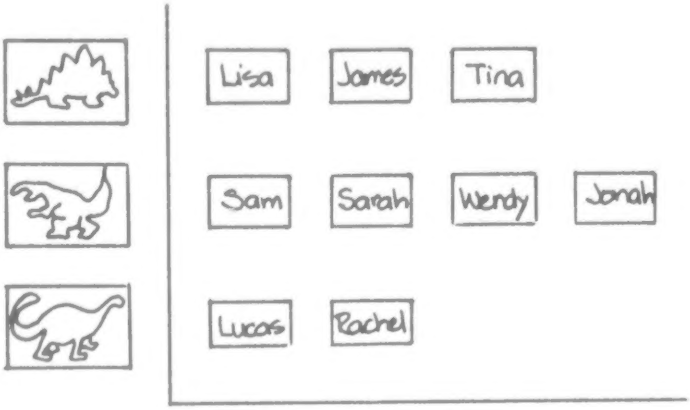
R/W 12. Scrambled Dinosaurs: Provide each student with the worksheet. Do one example on the blackboard before having students work individually or in pairs on the worksheet. Be sure that models of the dinosaur names are available.

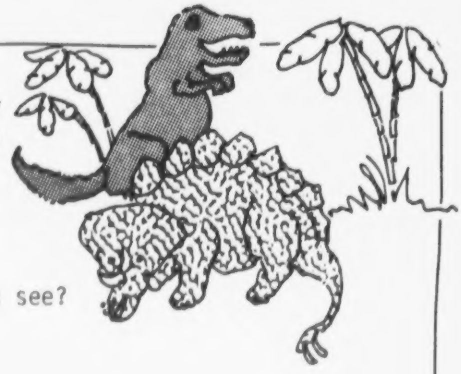
Application

1. Have students work in pairs or small groups to make up riddles about the various dinosaurs. For example:

   I am very large.
   I have sharp teeth.
   I'm very fierce.
   I am called "king lizard."
   "Who am I?"

2. Make a graph showing favourite dinosaurs of students in the class. If there are other classes in the school which have studied dinosaurs, look at the graphs of their favourites and compare results. Make one graph for all the classes. Make an experience chart comparing the graphs and display the graphs and chart with an award to the school's favourite dinosaur. If there are no other classes which have studied dinosaurs, your students could present basic information to older students (from CD#1b) and have them then select favourites.





3. Use Brown Bear, Brown Bear, What Do You See? by Bill Martin, Jr. as a model to write a class Big Book about dinosaurs. For example:

   Dimetrodon, Dimetrodon what do you see?
   I see a fierce Tyrannosaurus Rex looking at me!

   Tyrannosaurus Rex, Tyrannosaurus Rex what do you see?
   I see a gentle Apatosaurus looking at me.

   Etc.

   Have students illustrate the book and place it in the reading centre and/or school library.

4. Try to find one dinosaur for each letter of the alphabet. Make a Dinosaur Alphabet Book. For example:

   A was Allosaurus.
   B was Brontosaurus.
   C was Coelophysis.

   Etc.

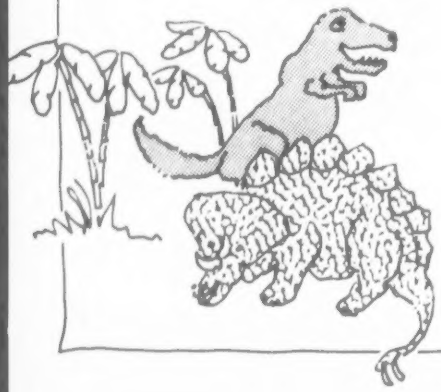
   If you can't find a dinosaur to go with each letter, invent your own!

5. Write limericks about the various dinosaurs, for example:

   The ferocious and mean Tyrannosaurus
   Lived long ago in the forests.
   He just loved to dine
   On whatever he'd find.
   Aren't you glad that he lived long before us?

6. Divide the class into several groups. Have each group learn and illustrate or dramatize a different poem to share with the rest of the class. Selections could include:

   I'm Building a Trap p. 125
   If a Giant Dinosaur p. 126
   The Dinosaur Walk p. 127
   The Prehistoric Animal Brigade p. 135



Lesson: **A Swamp Romp**

As this lesson emphasizes language related to a poem, you may wish to teach it during your Language Arts period.

English Vocabulary (*actually developed in this lesson)

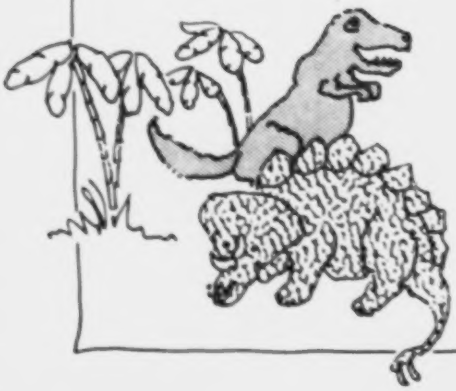
- * plodding
- * squelching
- * mulching
- * swamp
- * ooze
- * mud
- * shiver
- * quiver
- * romp
- * jump
- * bog
- * slog
- * sludge
- * trudge

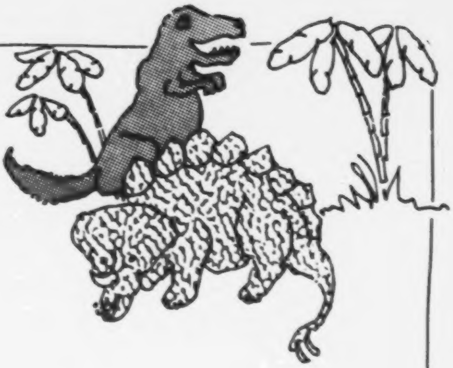
English Sentence Patterns (*actually developed in this lesson)

English Language Concepts (*actually developed in this lesson)

- * Rhyming words

Special Materials Required





A Swamp Romp

Adapted from "A Swamp Romp"
From In the Garden of Bad Things
Doug Macleod
Penguin Books Australia, Ltd.

Clomp Thump

Swamp Lump

Plodding in the ooze.

Belly Shiver

Jelly Quiver

Squelching as he chews.

Clomp Thump

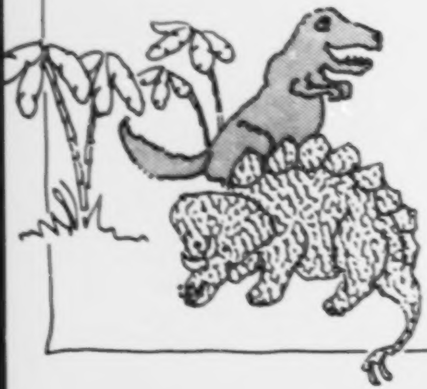
Romp Jump

Mulching all the mud.

Bog Trudge

Slog Sludge

Thud! Thud! Thud!



Concept Development/Language Exposure

1. a) If you have a large mud puddle or swampy area nearby, take the students for a walk. (Be sure they all wear rubber boots!) Talk about the sounds their feet make in the mud. Use words from the poem to describe their movements in the muck. Make a list of the words students suggest.

   b) Have students close their eyes while you recite the poem. Ask them how the poem made them feel. What kind of dinosaur/s do they think the poem is referring to (i.e., large, small, fat, heavy, etc.)? Where do they think the dinosaur is walking (a swamp, a lagoon, a bog, a mud puddle, etc.)? Recite the poem again, having the students pretend they are dinosaurs. They should move in the ways that the poem suggests. Ask students to tell you what words let them know how they should move. Examine these words with students, for example:

   plodding - Have you ever heard this word before? What do you think it means? (Have students practice plodding.) What other animals or things could you describe with this word? Can you think of any other words that mean almost the same thing?

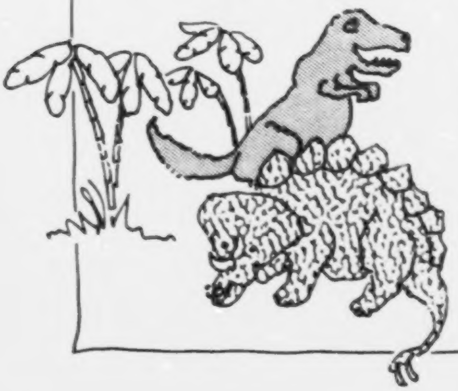
   squelching - How would you make a squelching noise? (Let students attempt to make such a noise.) What foods make a squelching noise when you eat them? Are there other words you could use to describe this noise?

   mulching - What do you think it means to be "mulching all the mud"? What parts of its body does the dinosaur use to do this?

   Discuss other words in the poem (shiver, quiver, romp, slog, sludge, etc.): What images do these words create in our minds? Do you know what all the words mean? Do you have to know what every word means to be able to form a picture of the dinosaur in your mind?

   Have each student draw a picture of the dinosaur in appropriate surroundings.

2. Have students clap out the rhythm as you recite the poem. Then recite it again and ask them to listen carefully for words that rhyme. Present the poem in written form. (At this point the students are not expected to read it.) Discuss the way that the rhyme scheme is set up. For example, you could circle all the words that rhyme with "clomp" in red, all those that rhyme with "thump" in blue, etc.



Language Practice

L 1. Elimination: Teacher calls out a list of words. Students clap their hands when they hear one that doesn't rhyme with the others. For example:

Teacher: "clomp, swamp, romp, thud, pomp,
clomp, slog, etc."
Students clap when they hear "thud" and "slog."

L 2. Hop the Line: Make a line on the floor with masking tape. Line the students up along the line with their toes touching it. Call out words in pairs. When students hear a pair that does not rhyme, they jump over the line. For example:

Teacher: "ooze/chews, clomp/swamp, thump/jump, thud/bog, ooze/lose,
mud/mom"

Students jump over the line when they hear "thud/bog" and "mud/mom."

L/S 3. Expansion Drill: Teacher begins by calling out a word. The first student repeats the word and says another that rhymes. The next student repeats both these words and adds another rhyming word. For example:

Teacher: "Thump."
Student 1: "Thump, jump."
Student 2: "Thump, jump, bump."

Continue until all students have had a chance to add a word or until you cannot think of any other rhyming words. (The teacher should quickly jot down the words in the order students give them.)

L/S 4. Find Your Rhyme: Whisper a different word to each student from a list of five sets of rhyming words:

clomp
swamp
romp
pomp

shiver
quiver
liver
sliver

ooze
chews
lose
news

mud
thud
bud
dud

thump
jump
lump
bump

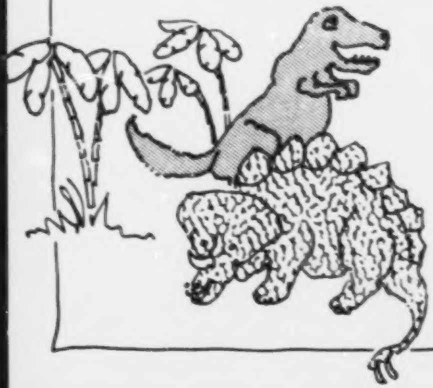
At a signal from the teacher, students begin to call out their words, repeating them many times. At the same time they must listen to try to find people who have words that rhyme with theirs. Students with words that rhyme should then stand together in a group.

S 5. Choral Speaking: Group students in various ways to chant the poem, for example:

Group 1: "Clomp Thump
Swamp Lump
Plodding in the ooze"

Group 2: "Belly Shiver
Etc.

OR



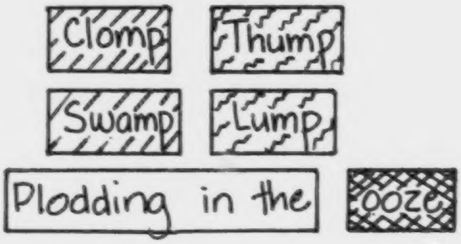
Group 1: "Clomp Thump
Swamp Lump"

Group 2: "Plodding in the ooze"
Etc.

When students have practiced their lines and know the poem well, add appropriate actions.

R 6. Pocket Chart:

a) Write the poem on colour coded cards (i.e., all words that rhyme will be written on cards of the same colour) and place them in the pocket chart. Chant the poem several times with students drawing their attention to the rhyme scheme.



S/R b) Remove one of the cards from the chart. Have individual students remove any cards that rhyme with the first. For example:

Thump
Lump
Jump

Read these words with students. Brainstorm as many other words as you can that also rhyme with these. Record the new words on cards of the same colour. Play various sight word games with the cards until students are able to read them easily.

Repeat this procedure with other words from the poem.

R/W c) Replace the original cards in the pocket chart. Read the poem again together. Ask students if any of the new words that you brainstormed might fit in the poem. (Because the cards are colour coded, it is easy for the students to fit the new words into the poem so that the rhyme scheme is maintained.)

Record any new combinations that you like on chart paper.

W 7. Copying: Have students copy their favourite versions of the poem.

Application

1 a) Get out the list of words students suggested from CD/LE activity #1a. (If necessary, take them for another "swamp romp." Have students chant the poem and move like dinosaurs in the mud.) Brainstorm other words for movements and noises to use in the poem.

Try inventing words too. Record all suggestions.

b) Try some of your new words in the poem. You will also have to think of rhyming words for them, for example:

If the students came up with the words "Squish Squash" you might end up with something like this:

Squish Squash
Plish Plosh
Plodding in the ooze.

Record the new versions of the poem on charts.

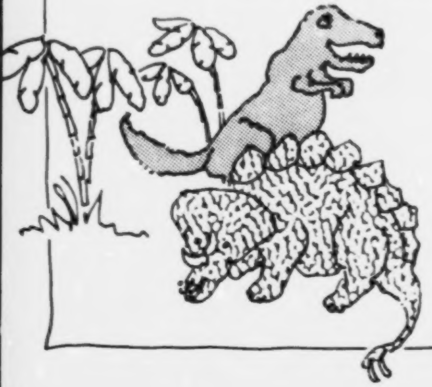
c) Have students make sound effects to accompany the poem: squeeze sponges, sit on blown up balloons or garbage bags, splash water, stamp their feet, drop something on a table or the floor, etc. Record the sound effects and present the poem to another class while the sound effects play on the tape.

2. a) Have students use the following model to make poems describing how dinosaurs move.

I am a dinosaur!
ROAR! ROAR! ROAR!
Hear me stomp!
CLOMP! CLOMP! CLOMP!

If the students have difficulty, you may wish to brainstorm rhyming words with them (stump/bump, tramp/stamp, plod/clod, shuffle/scuffle, etc.) or they could use words from "A Swamp Romp."

b) An alternate activity would be to teach the poem "Thunder Lizard, Brontosaurus" p. 135 to the class and have groups write new verses using different dinosaurs and the sounds they make when they move. You could also do this with "The Dinosaur Walk" p. 127.



Science/Social Studies

1. Sort dinosaur cut-outs or models into LAND, AIR, or WATER dwellers.
2. Make mini-volcanoes. (See directions on p.26 of Dr. Zed's Dazzling Book of Science Activities, An Owl Book, by Gordon Penrose, Greey de Pencier Publications, 1982.)
3. Find out what other animals shared the dinosaurs' habitat.

Teacher's Notes

These are possible activity ideas for this topic. They can be used in lessons you make up, as enrichment activities, or as learning centre activities. Most can be done in any language. Activities with an * are actually used in the sample lessons which follow. Spaces have been left for you to record your own activity ideas.

ACTIVITY IDEAS

TOPIC C: WHERE DINOSAURS LIVED

Math

1. Make up chants to practice simple addition and subtraction facts, for example:

   a) 10 stegosauruses (stegosauri?) with tails full of spines
   1 was eaten by Tyrannosaurus
   And then there were nine.
   Etc.

   b) 9 dinosaurs doing silly tricks
   3 sank in the quicksand
   And then there were six.
   Etc.

   c) Make up your own with students.

Language Arts

1. Learn vocabulary related to the earth's terrain as it was in the "dinosaur days."

   E.g., volcano
   lagoon
   swamp
   etc.

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Music, Poems, Stories

1. "Tyrannosaurus Rex Hunt"

Art

1. Make a mural showing grass, palm trees, volcanoes, etc. Mount dinosaur cutouts on the mural.
2. Make shoebox dioramas of dinosaurs and their habitat.

Physical Education/Movement

Special Activities

1. See suggestion for creating classroom environment on p. 55.

Lesson: Where Did Dinosaurs Live?

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

English Vocabulary (*actually developed in this lesson)

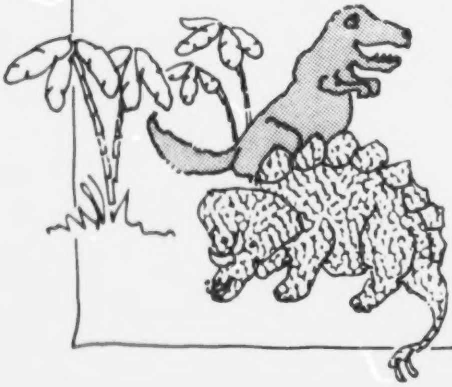
* volcano/es
* lagoon/s
* tree/s
* swamp/s
* bog/s
* land
* air
* water
* names of dinosaurs
* tree/s

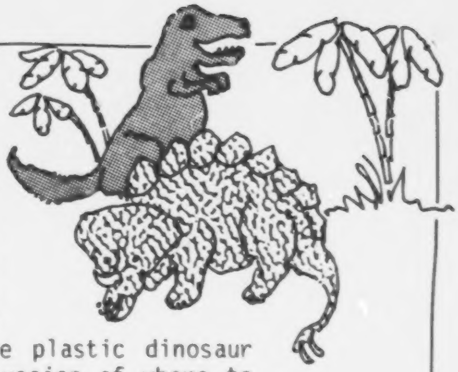
English Sentence Patterns (*actually developed in this lesson)

* Where did __________ live?
* __________ lived mostly in/on the __________.

Special Materials Required

Materials to construct tabletop diorama
Plastic dinosaur models
Pictures of dinosaurs
Worksheet: Where Did Dinosaurs Live?
Pictures of sky, land, water, swamp, forest, etc. where dinosaurs lived



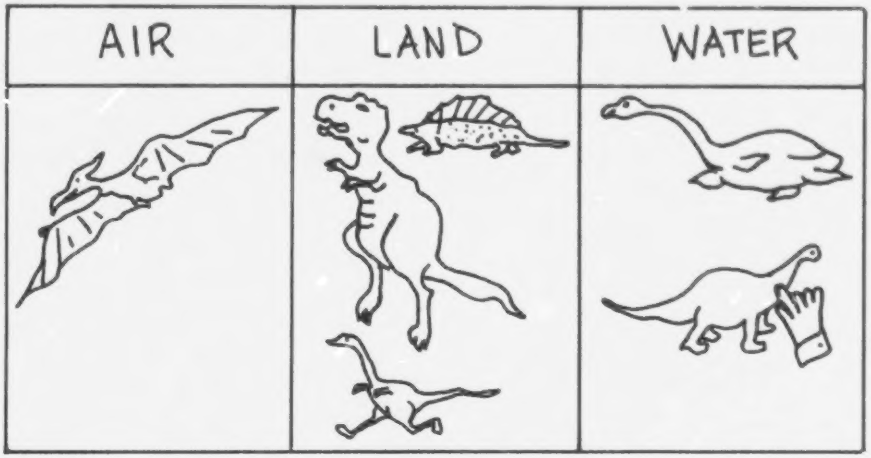


Concept Development/Language Exposure

1. Have students look at books, magazines, filmstrips, etc. to get ideas about how the earth looked when the dinosaurs lived. Introduce vocabulary items as you discuss their findings. Have students help you set up a 3D display on a tabletop. They could make plasticene volcanoes, crepe paper trees and plants, etc. Have students help you place the plastic dinosaur models in appropriate places. During your discussion of where to place each one, introduce the sentence pattern.

   E.g., Teacher: "Where did Apatosaurus live?"
   Students: "In a swamp?"
   Teacher: "That's right. Apatosaurus lived mostly in swamps. Can you think of any reason why it lived mostly in water?"
   Etc.

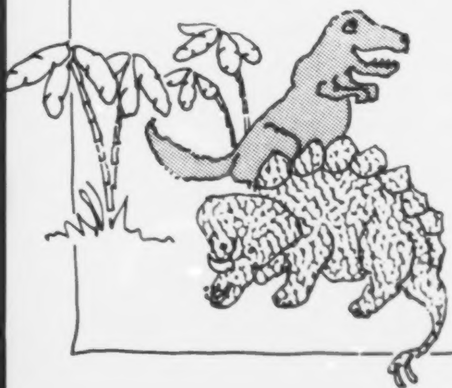
2. Make a chart labelled AIR, LAND and WATER. Sort pictures of the various dinosaurs with students. As students place each picture in the correct column of the chart, model the sentence pattern. For example:



"Apatosaurus lived mostly in water."

Language Practice

L 1. Musical Chairs: Set the chairs (one less than there are students) back to back in a row. Students walk around the chairs as teacher makes statements about where dinosaurs live. When s/he makes a false statement, students must sit on a chair. Remove a chair after each round.



L 2. True/False: Pass out pictures of various dinosaurs to students. Several students can have pictures of the same one if necessary. Point to the AIR, WATER, LAND chart. Make statements about where different dinosaurs lived. If the statements are true, students with the appropriate pictures hold them up. If the statements are false, no one holds up a picture. To make this a speaking activity have students correct the false statements.

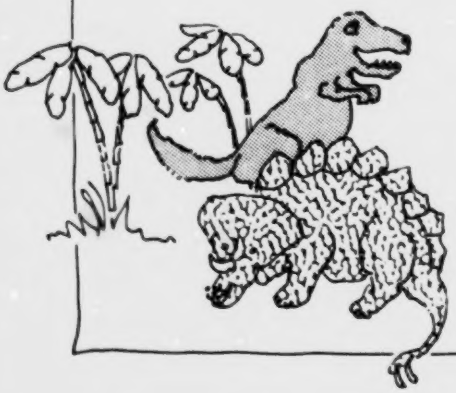
L 3. Dinosaur Disaster: Distribute pictures of the dinosaurs to students. (There should be at least two pictures of each dinosaur.) Students stand in a large circle. Teacher stands in the centre and makes a statement using the sentence pattern. Students holding the dinosaurs named change places. Occasionally the teacher calls out "Dinosaur Disaster!" and all students change places.

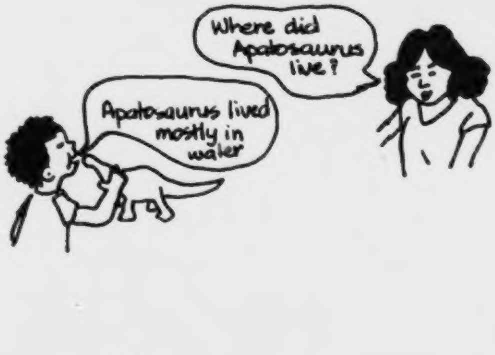
L/S 4. a) Ball Bounce: Students stand in a circle with teacher in the centre. Teacher calls out a question, "Where did ______ live?", then bounces a ball to one of the students. That student answers the question using the sentence pattern and returns the ball to the teacher. After some practice, this could become a chain drill activity. After the student answers the question, s/he asks another question and bounces the ball to another student.

b) Do this activity after students have had practice asking and answering the question about where various kinds of dinosaurs lived:

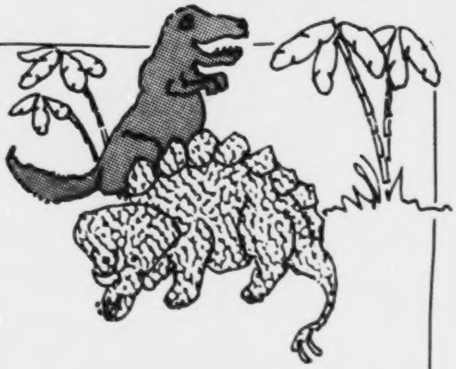
Pin pictures of various habitats to some students' backs. Pin pictures of various dinosaurs to the rest of the students' backs. Each dinosaur must find his appropriate habitat. When all the students think they have made correct pairs, have them tell the rest of the class using the appropriate sentence pattern. The other students check to make sure the sentences are correct and match the pictures students are wearing.

L/S 5. Hot Potato: Seat students in a circle on the floor. Place plastic dinosaur models in a bag and pass it around the circle. At a signal from the teacher the student holding the bag must take one of the dinosaurs from the bag and answer a question posed by the teacher. For example:




Where did Apatosaurus live?
Apatosaurus lived mostly in water

S/R 6. Pocket Chart: Place the following sentence strips in the pocket chart:

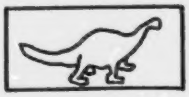


lived mostly in the air.

lived mostly on the ground.

lived mostly in the water.

Distribute pictures of the dinosaurs to students. Ask the first student to hold up his/her picture. Ask a question about that dinosaur. (e.g., Where did ____________ live?) When student has responded, have him/her attempt to determine which sentence strip is the appropriate one for his/her picture. S/He then places the picture next to the sentence strip and reads the statement.



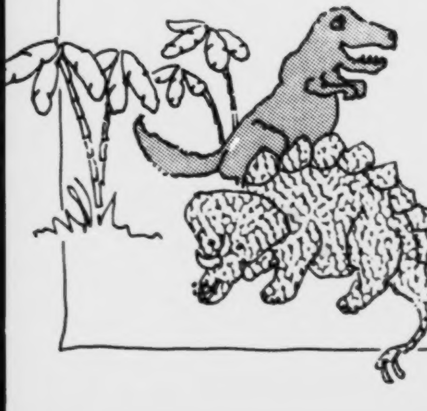
lived mostly in the water.

When all pictures have been correctly placed, distribute dinosaur name cards. Have the students match these to the appropriate dinosaur pictures and read the completed statements. (If students are sufficiently acquainted with the written forms of the dinosaur names, you may wish to omit the pictures altogether.)

W 7. Worksheet: Have students complete the worksheet "Where Did Dinosaurs Live?" individually. Allow them to use the chart from Activity #6 as a model.

Application

1. Categorize present-day animals as air dwellers, land dwellers and water dwellers. Cut pictures from magazines and use them to make a mural.



Science/Social Studies

1. a) Sort pictures of dinosaurs into two categories:
   MEAT-EATERS and PLANT-EATERS
   b) Sort pictures of other animals into two categories:
   MEAT-EATERS AND PLANT-EATERS
2. Try to find out how much a large dinosaur would eat each day. Compare this to the amount you eat.
3. Dinosaurs' teeth give us clues about the types of food they ate. Examine a friend's teeth. What do they tell you about what people eat? Invite a dentist or dental assistant to your classroom to talk about the various teeth and how we use them. Examine animal skulls to see what their teeth are like.
4. Discuss how the various dinosaurs' characteristics helped them obtain their food (e.g., long necks, sharp claws, etc.).

Teacher's Notes

These are possible activity ideas for this topic. They can be used in lessons you make up, as enrichment activities, or as learning centre activities. Most can be done in any language. Activities with an * are actually used in the sample lessons which follow. Spaces have been left for you to record your own activity ideas.

ACTIVITY IDEAS

TOPIC D: DINOSAUR FOODS

Math

1. Make models of a Tyrannosaurus teeth. Use them as measuring instruments.

Language Arts

1. Make booklets: Animals That Eat Plants
   Animals That Eat Meat
2. Develop a story about a very hungry dinosaur. (Use The Very Hungry Caterpillar by Eric Carle as a model.)

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Music, Poems, Stories

1. "Listen"
2. "Dinosaurs"
3. "If a Giant Dinosaur"
4. "A Dinosaur Came to Our Town"
5. "Baby Dinosaur"
6. "The Dinosaur Dinner"
7. "Company"
8. "The Dinosaur's Lunch"

Art

1. Have one group make a herbivore mobile and another a carnivore mobile.
2. Fingerpaint with pudding. Cut into the shapes of dinosaurs.

Physical Education/Movement

Special Activities

1. Have a Dino Dinner. Serve Skeleton Soup (Chicken Noodle Soup), Dino Dogs (hot dogs), Swamp Water (green KoolAid), Red Rocks (apples), and Dried Mud (chocolate brownies). Make dinosaur shape invitations. Write the menu on dinosaur shapes too!

Lesson: What Did Dinosaurs Eat?

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

English Vocabulary (*actually developed in this lesson)

- * carnivore
- * herbivore
- * meat-eater
- * plant-eater
- * names of familiar animals
- * names of dinosaurs

English Sentence Patterns (*actually developed in this lesson)

* Is/Was a _________ a carnivore or a herbivore?
* A _________ is/was a _________.

Special Materials Required

Pictures of various dinosaurs
Pictures of familiar carnivores
Pictures of familiar herbivores
Worksheets: Can You Classify the Dinosaurs You Know?
It Doesn't Belong!!
Feed the Dinosaur

Concept Development/Language Development

1. Have students tell you all the things that they ate in the past 24 hour period. Record items on cards. Sort the cards into two columns in the pocket chart labelled PLANTS and MEAT. Discuss where we get the plants and meat we eat.

2. Look at pictures of familiar animals (those that are clearly plant or meat eaters.) Talk about the foods that each animal eats. Tell students that some animals eat only meat and are called carnivores; some animals eat only plants and are called herbivores. Sort pictures into two groups, placing them in bags labelled either HERBIVORE or CARNIVORE. Discuss the characteristics of a carnivore; it must be able to move fast to grab other animals; it must have strong teeth to chew the meat. Discuss the characteristics of a herbivore: it may not be able to move quickly enough to catch other animals; its teeth are flat for grinding. Look at animal skulls to determine how the teeth of herbivores and carnivores are different. Look at pictures of unfamiliar animals and see if students can guess whether they are plant or meat-eaters using the above mentioned characteristics as clues. Use the sentence patterns to discuss the animals with your classroom assistant or a puppet. For example:

   Teacher: "Is a caribou a carnivore or a herbivore?"
   (Hold up picture of caribou.)
   C.A.: "A caribou is a herbivore."

3. Look at pictures of the dinosaurs and have students try to determine if they are plant or meat-eaters. Sort the pictures into the pocket chart. Discuss each dinosaur with your C.A. or a puppet using the sentence patterns. For example:

   Teacher: "Was Apatosaurus a herbivore or a carnivore?"
   (Hold up picture.)
   C.A.: "Apatosaurus was a herbivore."

Language Practice

L 1. Blindfold game: Blindfold one student. Have him/her follow the sound of your voice while you whisper the word "herbivore." Continue the game using "herbivore" or "carnivore" until everyone has had a turn.

L 2. True/False: Have each student draw a picture of plants and a picture of meat. Students hold up the correct picture if a statement made by the teacher is true and don't hold up anything if the statement is false. For example:

   Hold up a picture of Tyrannosaurus Rex and say, "Tyrannosaurus Rex was a meat-eater. Tyrannosaurus Rex was a carnivore." (Students hold up the picture of meat.)

L 3. Elimination: Say a list of words in which one word does not belong, for example:

Carnivore: Tyrannosaurus Rex, Apatosaurus, wolf, fox

Students clap when they hear the word that does not belong.

L 4. Picture Hop: Lay pictures of carnivores and herbivores on the floor. Call out either "herbivore" or "carnivore." One student hops to an appropriate picture. (Later you may have the student make a statement about the animal s/he has selected, for example: "Tyrannosaurus Rex was a carnivore.")

L/S 5. Big Fat Dinosaurs: Teacher chants: "I am a ___. I am a big fat ___. I eat plants/animals." If teacher says "plants," students call out "herbivore." If teacher says "meat," students call out "carnivore."

S 6. What Am I?:

a) Hold up one of the animal or dinosaur pictures and ask, "Was/Is a ___________ herbivore or a carnivore?" Students respond, first as a group and later individually, using the sentence pattern.

b) Distribute one picture to each student. The first student holds up his/her picture and asks the second student, "Was/Is a ______ a herbivore or a carnivore?" The second student responds using the sentence pattern. The rest of the class decides if the response is correct. Continue until each student has had a chance to both ask and answer a question.

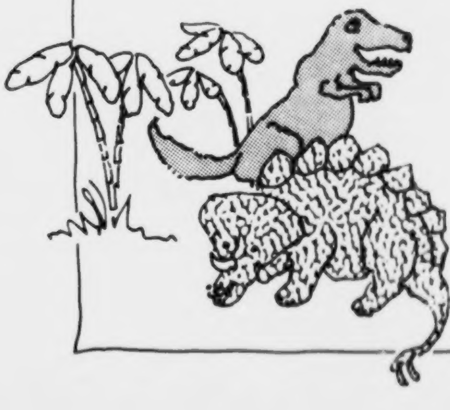
S 7. Picture Relay: Place the animal and dinosaur pictures in a box at the front of the classroom. Divide class into two teams. When teacher calls out either "herbivore" or "carnivore," one member from each team races to find an appropriate picture and make a statement about it using the sentence pattern.

R 8. Provide each student with the "It Doesn't Belong" worksheet.

R/W 9. Provide each student with the worksheet "Can You Classify the Dinosaurs You Know?" Have them choose their favourite dinosaurs and classify them as herbivores or carnivores.

Application

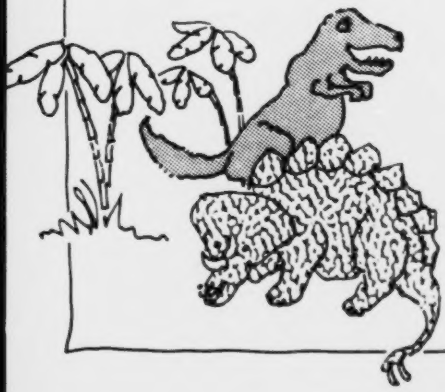
1. a) Brainstorm a list of foods that a dinosaur (either a herbivore or a carnivore) might eat. These could be silly or serious. Have students use words from the list to fill in the "Feed the Dinosaur" worksheet.



b) Divide the class into groups. Use items from the dinosaur menu list (1a) to make up verses for "A Dinosaur Came to Town." Recite the poem with each group doing its verse and the whole class or individuals reciting the first two and the last verses.

2. Teach students the poem "Listen!" p. 124 and have them make sound effects for it.

3. Have students work in pairs. One student is the reporter; the other student picks a dinosaur. The reporter tries to find out what the "dinosaur" liked to eat. S/he records the dinosaur's favourite foods. Pairs switch roles. Have each pair share their reports with the class.



Science/Social Studies

1. Compare the body coverings of dinosaurs to those of other animals. Discuss how these coverings help the animals survive.
2. Dinosaurs laid eggs with tough, leathery shells. How did this help them survive? How are dinosaur eggs like other eggs? How are they different from other eggs?

*3. Discuss structural adaptations of the dinosaurs that are similar to animals that we know today.
   E.g., How was Apatosaurus like a giraffe?
   What animal does Triceratops remind you of? Why?
   Etc.

Teacher's Notes

These are possible activity ideas for this topic. They can be used in lessons you make up, as enrichment activities, or as learning centre activities. Most can be done in any language. Activities with an * are actually used in the sample lessons which follow. Spaces have been left for you to record your own activity ideas.

ACTIVITY IDEAS

TOPIC E: ADAPTATIONS OF DINOSAURS

Math

1. Compare the size of dinosaur eggs to other eggs. (Make papier mache models.)

Language Arts

1. Have students pretend they are baby dinosaurs hatching from their eggs. What do they hear? see? feel? Brainstorm words for students to use to write stories about their experiences.
2. Brainstorm ideas about what may have happened to specific dinosaurs if they had not had certain features. Use these ideas to write stories.
   E.g., The Day Tyrannosaurus Lost His Teeth
   Where Are Stegosaurus' Spikes?
   Etc.

Music, Poems, Stories

1. "A Magic Spooky Poem"

Art

Physical Education/Movement

1. Have students act out various dinosaurs.
   E.g., Apatosaurus stretching his long neck.
   Pteranodon flapping his wings.

Special Activities

*1. Students design original dinosaurs and explain special features that allow them to survive.

Lesson: Structural Adaptations of Dinosaurs

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

English Vocabulary (*actually developed in this lesson)

- * small head
- * sharp pointed teeth
- * sharp curved claws
- * huge body
- * short thick legs
- * long strong neck

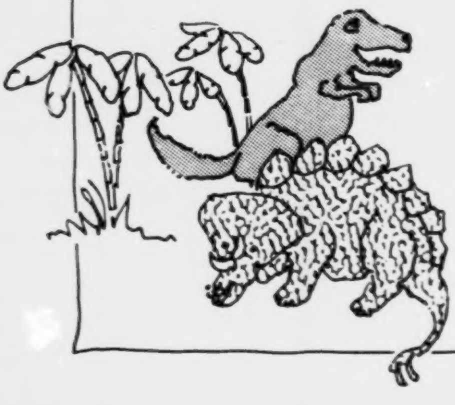
- * descriptive words brainstormed by students

English Sentence Patterns (*actually developed in this lesson)

- * Why did/does __________ have __________?
- * __________ had/has __________ for/to __________.

Special Materials Required

Pictures of various dinosaurs
Large outline figures of dinosaurs
Plastic dinosaur models
8 1/2 X 11 outline figures of dinosaurs



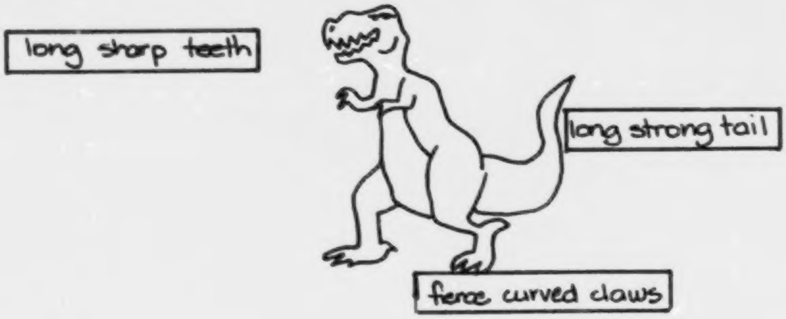
Concept Development/Language Exposure

1. Discuss structural adaptations of various familiar animals with students. For example:

   Why do polar bears have white fur?
   Why do caribou have antlers?
   Why do giraffes have long necks?
   Etc.

   Model students' responses using the sentence pattern.

2. a) Place a large outline figure of Tyrannosaurus on the board. Tell students that you are going to label its body parts. Begin at the head and work back to the tail. Print the word "teeth" on the board. Ask students to tell you words that describe the teeth. Record these words on the board. Discuss the brainstormed words and circle one or two that you think best describe the teeth. Copy these onto a sentence strip and place it next to the head of the outline figure. Continue in this way until all the major body parts have been described and labelled.



Ask students to think of reasons why Tyrannosaurus had these characteristics. Use the sentence pattern: "Why did Tyrannosaurus have sharp teeth?" Discuss the reasons given and decide, with students, which is the most likely. Model the response in the sentence pattern: "Tyrannosaurus had long sharp teeth for eating other dinosaurs."

Repeat this activity with the other dinosaurs.

Language Practice

L 1. Thumbs up/Thumbs down: Make statements about the various dinosaurs. If they are true, students give "thumbs up" signal; if they are false, students give "thumbs down" signal.

E.g., "Stegosaurus had a spiked tail for scratching his ears." (Thumbs down)

"Stegosaurus had a spiked tail for fighting his enemies." (Thumbs up)

L 2. Middle Man: Place two sets of dinosaur pictures on the floor in lines opposite each other. Assign each student, except one, to a dinosaur. Have them stand on the appropriate pictures. The extra student is the middle man and stands between the two lines:

X X X X X X

X (middle man)

X X X X X X

When the teacher calls out a statement about one of the dinosaurs, the two students who are standing on the appropriate pictures try to change positions before the middle man can take one of their places. If the middle man succeeds, he takes over that picture and the unlucky runner becomes the new middle man.

E.g., Teacher: "Apatosaurus had a long neck to reach the leaves on trees."

Students standing on pictures of Apatosaurus try to change places.

L 3. Flashlight Game: Tape pictures of the dinosaurs around the room. Make up a riddle about one of the dinosaurs. Have one student shine a flashlight on the correct dinosaur. For example:

Teacher: "This dinosaur had three horns on its head to protect itself."

Student shines flashlight on Triceratops.

Continue until all students have had a chance to use the flashlight.

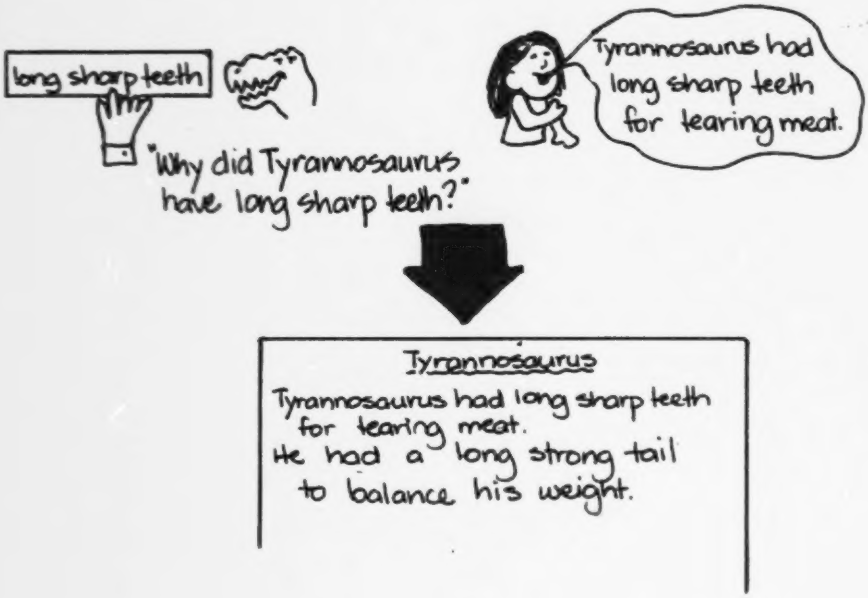
L/S 4. Guess the Part: Teacher makes a statement about a dinosaur such as: "Tyrannosaurus had these for tearing meat." Students must guess what body part is being described, in this case they are Tyrannosaurus' sharp teeth.

S 5. Hot Dinosaur: Seat students in a circle and pass around one of the model dinosaurs as music plays. When the music stops, the student holding the dinosaur must make a statement about it using the sentence pattern. Change the type of dinosaur frequently.

S 6. Categories: Students form a circle. One student, IT, stands in the centre. IT tosses a ball to a player in the circle and names a category (i.e., a dinosaur body part). The player who catches the ball must make a statement about that category before IT counts to ten. If s/he is successful, s/he takes ITs place.

IT: "Tail."
Player #1: "Stegosaurus had spikes on its tail to fight its enemies."

S/R 7. Charts: Refer to the outline figures from CD#2. Point to the labels and have students read them aloud. Ask questions about those body parts using the sentence pattern. Record their responses on charts. Chant the statements on the charts. Hang charts next to the outline figures.


long sharp teeth
"Why did Tyrannosaurus have long sharp teeth?"
Tyrannosaurus had long sharp teeth for tearing meat.
Tyrannosaurus
Tyrannosaurus had long sharp teeth for tearing meat.
He had a long strong tail to balance his weight.

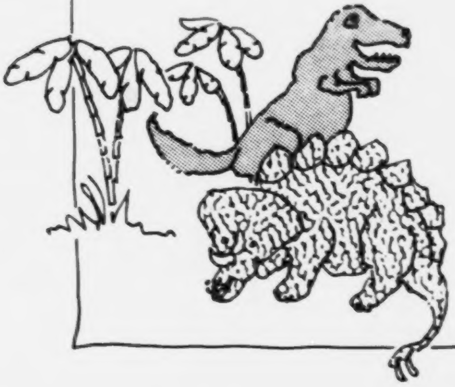
R 8. Scavenger Hunt: Write the statements from Activity #7 on sentence strips. Divide the class into teams, one team for each type of dinosaur. Hide the sentence strips around the classroom. The first team to locate their entire set of sentence strips and match them to the charts wins. (To make this activity easier, use different colours for each set of sentence strips.)

W 9. Charts: Divide students into groups. Let each group choose a dinosaur. (Make sure there is one student in each group who can write.) Have the group make an experience chart about the special features on its dinosaur. Encourage each student to write/copy one of the sentences. Share the results with the class.

Application

1. Select students who will pretend to be the various dinosaurs. Other students interview these dinosaurs, asking questions such as, "Mr. Apatosaurus, why do you have short thick legs?" The student acting as Apatosaurus responds with a statement such as, "I have short thick legs to support my huge heavy body." Have students tape record their interviews.

2. Have each student (or pair of students) design a new dinosaur with special characteristics. Have them explain to their classmates how these features help their dinosaur to survive.



Science/Social Studies

1. Find out about "monsters" that may exist today.
   E.g., Loch Ness monster
   Yeti
   Bigfoot
   etc.
2. Find out about other animals that have become extinct. Why did they become extinct? What animals are presently endangered? How can people help them? The local Renewable Resources office may be able to help with this discussion.

Teacher's Notes

These are possible activity ideas for this topic. They can be used in lessons you make up, as enrichment activities, or as learning centre activities. Most can be done in any language. Activities with an * are actually used in the sample lessons which follow. Spaces have been left for you to record your own activity ideas.

ACTIVITY IDEAS

TOPIC F: THE END OF THE DINOSAURS

Math

Language Arts

1. Make scrapbooks about endangered or extinct animals. Collect newspaper articles, pictures, etc. Write to animal conservation groups or your wildlife officer for materials.
2. If dinosaurs had adapted to the changes that occurred, what would life on Earth be like today?

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Music, Poems, Stories

1. "A Dinosaur"
2. "The Mighty Dinosaurs"
3. "Long Gone"

Art

1. Make "Wanted" posters of endangered animals.
2. Paint murals showing possible reasons that dinosaurs became extinct.
3. Make a collage of extinct and endangered animals.

Physical Education/Movement

Special Activities

1. Have a poster contest to make people aware of endangered species.

Lesson: What Happened to the Dinosaurs?

As this lesson emphasizes language related to science concepts, you may wish to teach it during your Science period.

English Vocabulary *actually developed in this lesson)

* extinct * meteor * disease

English Sentence Patterns (*actually developed in this lesson)

* Why did dinosaurs become extinct?
* Dinosaurs became extinct because _________.

Special Materials Required

Concept Development/Language Exposure

1. Ask students why there are no dinosaurs alive today. Introduce and explain the word "extinct." Explain to students that no one really knows what happened to the dinosaurs, but scientists have several ideas. Explain these theories in simple language:

Theory #1: If a huge meteor hit the earth, it might fill the air with lots of dust and dirt. It might also start eruptions from the volcanoes. The smoke and dirt in the air would keep the sun from shining on the earth's surface, and most of the plants would then die. The plant-eating dinosaurs would have no food and would starve. At first, the meat-eating dinosaurs would eat all of the dead and dying dinosaurs, but soon they would run out of food and would also die.

Theory #2: Perhaps a strange new disease that killed only dinosaurs appeared at the end of the age of the dinosaurs. This disease could have spread very quickly and killed all the dinosaurs in a short time.

Theory #3: Many scientists think that the earth got much colder at the end of the Age of Dinosaurs. Since the dinosaurs were used to warm weather, the cold could have killed them.

Theory #4: Other animals may have eaten large numbers of dinosaur eggs, and reduced the number of dinosaurs born.

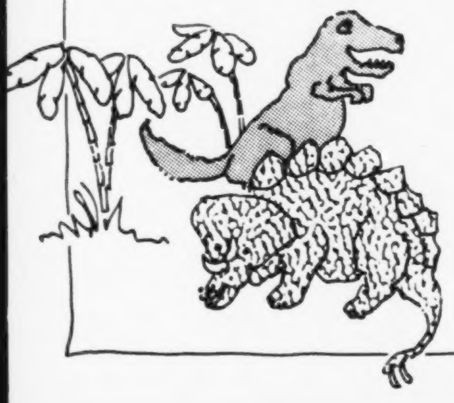
Model sentence patterns using ideas from the four theories presented above, for example:

"Dinosaurs became extinct because a meteor hit the earth."
"Dinosaurs became extinct because a new disease killed them."
"Dinosaurs became extinct because the earth got too cold for them to live."
"Dinosaurs became extinct because other animals ate their eggs."

Remember to emphasize the fact that no one really knows for sure why dinosaurs became extinct. This little poem may help you to make that point:

The dinosaurs are dead and gone;
Completely disappeared.
And no one knows the reason why -
It's very, very weird.
Some say that they lost their eggs,
And some say that they froze.
But if you want the honest truth,
The fact is no one knows!

From Hocus Pocus Diplodocus, by Tom Stainer
Macdonald Educational, 1980



Language Practice

L 1. Have students clap their hands every time they hear the word "extinct" in a list of words. For example:

"Extra, stink, extinct, exit, extinct, exist, except, tint, extinct, etc."

L 2. Thumbs Up/Thumbs Down: Teacher makes statements. If they could be true, students give "thumbs up" signal; if they are false, students give "thumbs down" signal. For example:

Teacher: "Dinosaurs became extinct because the earth got too cold for them to live."

"Dinosaurs became extinct because people shot them all." (Thumbs down)

L/S 3. Spin the Bottle: Students sit in a circle. Teacher makes a statement and spins a bottle in the centre of the circle. Whoever the bottle points to must repeat the teacher's statement.

L/S 4. London Bridge: Have two students form a "bridge" with their arms. The other students walk under the bridge as music plays. When the music stops, the bridge drops and traps one student. S/he must answer a question posed by the other students. For example:

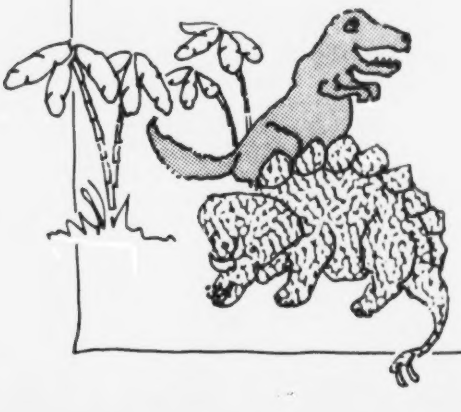
Students: "Why did dinosaurs become extinct?"
Student: "Dinosaurs became extinct because other animals ate their eggs."

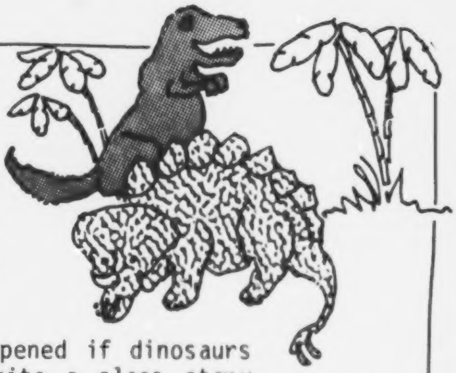
S/R 5. Have students dictate statements to you telling possible reasons why the dinosaurs disappeared. Record their statements on sentence strips. Read them several times with students. Have students identify key words. Cut the sentences into words and have students reconstruct them in the pocket chart.

R/W 6. Write several statements about the disappearance of the dinosaurs on a worksheet. Students copy only those statements that are true.

Application

1. Divide the class into four groups. Assign one of the theories to each group and have them paint a mural depicting their theory.

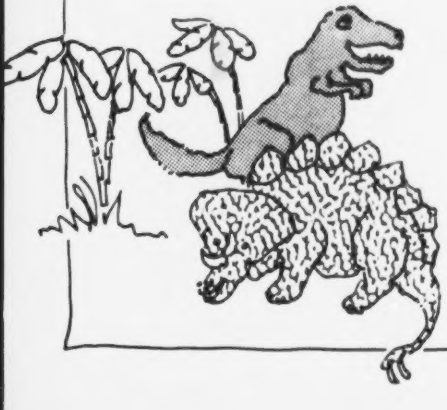




2. Discuss "endangered" species with students. (A set of Summary Sheets, published by the Committee on the Status of Endangered Wildlife in Canada, is available from the Canadian Wildlife Federation, 1673 Carling Avenue, Ottawa, Ontario, K2A 1C4.) Why have these animals become endangered? How can people help to make sure that they do not become extinct?

3. Ask students to brainstorm what would have happened if dinosaurs had not become extinct. Use these ideas to write a class story describing how our lives would be different if dinosaurs still roamed the earth. (You could also do this activity writing from the dinosaurs' point of view!)

4. Teach the students the poem "The Mighty Dinosaur" p. 126.



CULMINATING ACTIVITIES

1. Theme Notebooks: Have students design their own covers for their Dinosaur Notebooks. These notebooks could include favourite poems, songs or chants, pictures, small craft projects, worksheets, stories, and poems that students have written, etc. related to the dinosaur theme. It is important to allow students to choose what they will put in their notebooks. The notebooks are their personal "souvenirs" which they may take home to share with family and friends.

2. Make books about dinosaurs using frame sentences, for example:

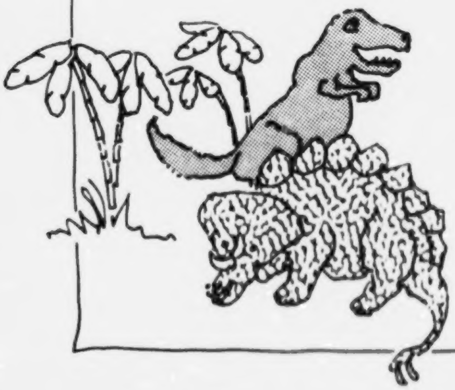
   a) Dinosaurs could __________.
   Dinosaurs could __________.
   Dinosaurs could __________.
   But they couldn't __________.

   b) Dinosaurs are extinct.
   They used to __________.
   They used to __________.
   They used to __________.
   But now they are extinct.

3. Write NounVerbAdverb (NVA) poems about various dinosaurs, for example:

Stegosaurus	Diplodocus	Allosaurus
Sang	Danced	Ate
Sweetly	Delicately	Angrily

Illustrate the poems and put them together to make a book or copy the poems onto appropriate dinosaur shapes and display.



4. If you could be any dinosaur, which would you want to be? Why? Write a story about your life. Draw a picture of yourself.

5. Imagine what it would be like to have a dinosaur as a pet. How would you take care of it? Where would it sleep? What would it eat? How would you keep it warm in the wintertime? What would your neighbours think?

6. Tell a round-robin story about dinosaurs: The first student sets up the situation, then calls on another student to continue the plot.

   E.g., Johnny: "Yesterday I was playing on the swings when suddenly a Tyrannosaurus ran up behind me and Sarah said..."

   Sarah: "I was sitting on the swing next to Johnny and the Tyrannosaurus started to push me higher and higher in the sky. And Simon said..."

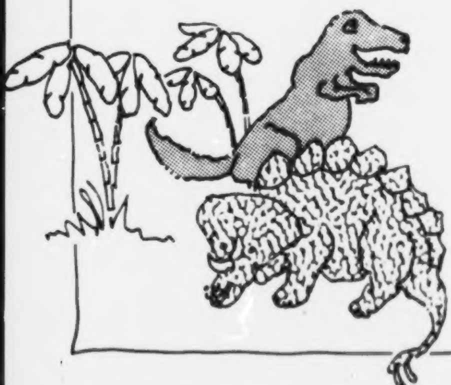
   Simon: Continues the story.

   Continue until all students in the group have had a chance to add to the story. Tape record the story as students tell it so that later you can transcribe it into a book for students to illustrate.

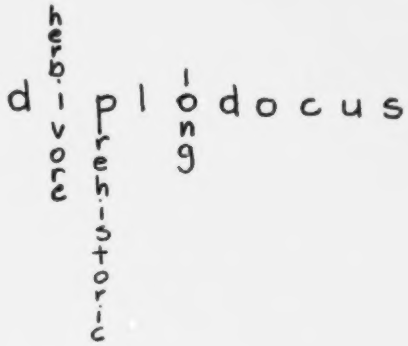
   (Refer to the The Tyrannosaurus Game by Steven Kroll to see what happened when one class invented a dinosaur story!)

7. Write similes about dinosaurs, for example:

A dinosaur is as big as _________.
A dinosaur is as long as _________.
A dinosaur's teeth are as long as _________.
A dinosaur's skin is as bumpy/scaly/smooth as _________.
A dinosaur's claws are as sharp as _________.



8. Have each student choose their favourite dinosaur name and write it in the centre of a piece of paper. Have them build as many words as they can from the basic word. The new words must relate in some way to the first word. For example:



9. Invent some new dinosaurs that would be useful in everyday life. For example:

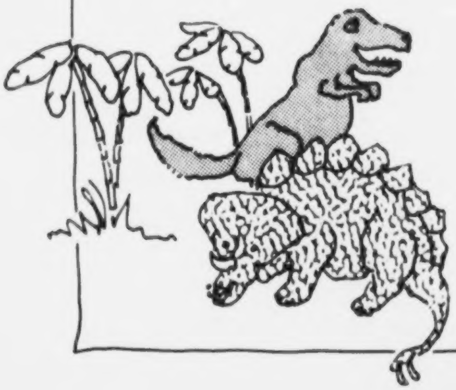
   A bridgasaurus could help you cross a river.
   A slidosaurus would be fun on the playground.
   You could give your sweetie a Valentinosaurus on February 14th.

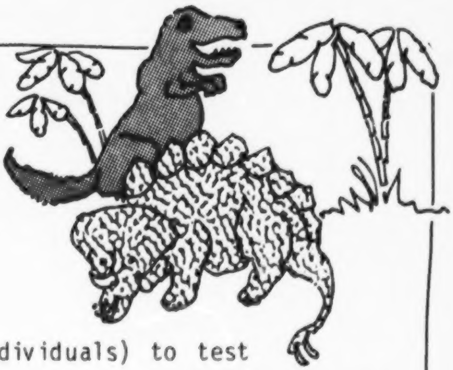
   Brainstorm ideas with the class. Have each student illustrate a "sillysaurus" and write a sentence describing how it would be useful.

10. Give students a picture of two dinosaurs. Have them write or dictate the conversation the dinosaurs might have had.

11. Have your students teach a class of younger children the fingerplay "The Dinosaurs" p. 132.

12. Have a Dinosaur Party. Invite parents to see the classroom and the students' work. Groups could recite poems they've learned; individuals could read work they've written, etc.





EVALUATION ACTIVITIES

It is important to assess what your students have learned during this unit. The following activities evaluate language and concepts.

You can do them orally (in small groups or with individuals) to test listening and speaking or on paper to test reading and writing. These are only suggestions; you can substitute different content or vocabulary items to make them more appropriate for your students. You probably will want to include many other activities as well.

1. Tell or give the students four or five words or phrases. Have them indicate which do not belong. For example:

   reptiles: dinosaurs, crocodiles, humans, alligators, snakes

2. Tell or give the students sentence beginnings to match to sentence endings. For example:

Apatosaurus had a long neck	for tearing meat.
Tyrannosaurus had sharp teeth	to protect itself.
Triceratops had three horns	to reach high leaves.

3. Tell or give the students the beginning of a sentence and a number of possible sentence endings. They indicate which sentence endings are appropriate for the sentence beginning. For example:

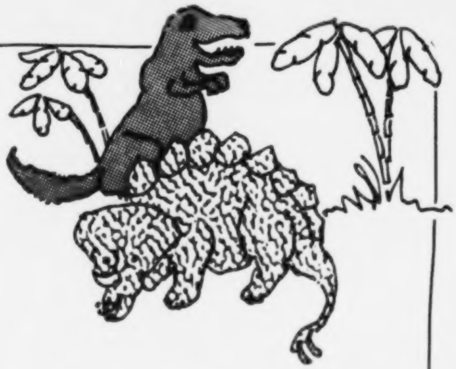
Dinosaurs lived	millions of years ago.
	before people were on the earth.
	last year.
	a long time ago.

4. Tell or give the students a description of several dinosaurs. They have to indicate which dinosaur each description fits. For example:

   It was a meat-eater. It's teeth were 15cm long. It had very sharp claws.

5. Tell or give students a simple story about dinosaurs. Deliberately make some mistakes in the story. Students try to catch your mistakes and correct them.

6. Give the students pictures of dinosaurs studied in the unit. They identify each, label as many parts as they can, and write or tell about what they ate, where they lived, etc.



POEMS, SONGS AND STORIES

Magic Spooky Poem

From Wilga the Witch
Reading Rigby - An Australian Program
Rigby Ltd., 1975

There was an egg
That grew and grew.
The biggest egg, I'm telling you,
that anything ever laid.

It grew and grew,
And didn't stop.
Tall as a tree,
Wide as a shop.

And then there was a CRACK!!
The biggest crack, I'm telling you,
that anyone ever heard.

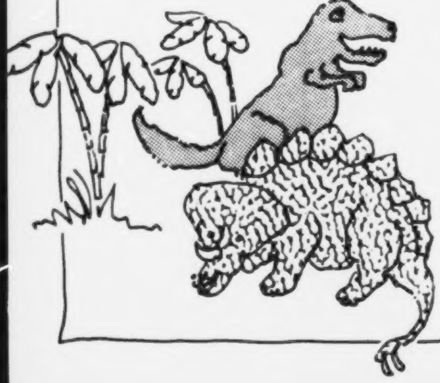
And from the egg
There came a thing.
A claw?
A paw?
A foot?
A wing?
The strangest thing, I'm telling you,
that anyone ever saw.

And then there came __________
(What came out of the egg?)

Baby Dinosaur

Author Unknown

Oh, I'm bringing home a baby dinosaur,
Won't my mommy fall right through the floor,
'Cause I'm bringing home a baby dinosaur -
Gobble, gobble, gobble -
OOOOH, it ate me!



Them Bones

Traditional

The toe bone's connected to the foot bone.
The foot bone's connected to the leg bone.
The leg bone's connected to the knee bone.
The knee bone's connected to the thigh bone.
The thigh bone's connected to the hip bone.
The hip bone's connected to the back bone.
The back bone's connected to the head bone.
Now hear the word of the Lord!

Them bones, them bones gonna walk around!
Them bones, them bones gonna walk around!
Them bones, them bones gonna walk around!
Oh, hear the word of the Lord!

Listen!

From Spooky Rhymes and Riddles
Scholastic Inc., 1972

Listen!
Listen to the dinosaur!
grinch, grinch,grunch
chip, chop, crunch
grickle
grackle
grooble
grobble
munch, munch, munch
Whatever in the world is it having for lunch?

A Dinosaur

Carl S. Junge
Source Unknown

A dinosaur,
A beast of yore
Doesn't live here,
Anymore.

Dinosaurs

Author Unknown

Dinosaurs lived long ago
When the world was very new.
They were very big and strong.
They were scary too!

Some of them liked plants to eat
from the ocean's shore.
But some of them would rather eat
ANOTHER DINOSAUR!

I'm Building a Trap

Adaptation of "The Trap"
From Whole Language Sourcebook
By Jane Baskwill and Paulette Whitman
Scholastic-TAB Publications Ltd., 1986

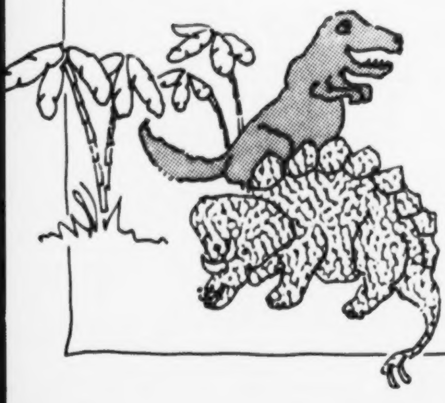
Adapted by M. Gilmour

I'm building a trap for Trachodon,
Huge, enormous Trachodon.
I saw him last week
Down at the creek,
So I'm building a trap for Trachodon.

I'm building a trap for Triceratops,
Bumpy, spiky Triceratops.
I saw him last night
And he gave me a fright,
So I'm building a trap for Triceratops.

I'm building a trap for Tyrannosaurus,
Horrible, fierce Tyrannosaurus.
I saw him today
Right outside the Bay,
So I'm building a trap for Tyrannosaurus.

I'm building a trap for Diplodocus,
Gentle, gigantic Diplodocus,
I saw him at noon
Wading in the lagoon,
So I'm building a trap for Diplodocus.



If a Giant Dinosaur

Adaptation of "If a Giant Monster"
From Whole Language Sourcebook
By Jane Baskwill and Paulette Whitman
Scholastic-TAB Publications Ltd., 1986

Adapted by M. Gilmour

If a giant Dimetrodon
Stops to say hello,
Ask him in for dinner
And feed him lime Jello.

If a giant Stegosaurus
Stops to swish his tail,
Ask him in for dinner
And feed him from a pail.

If a giant Tyrannosaurus
Stops and gives a scream,
Ask him in for dinner
And feed him some ice cream.

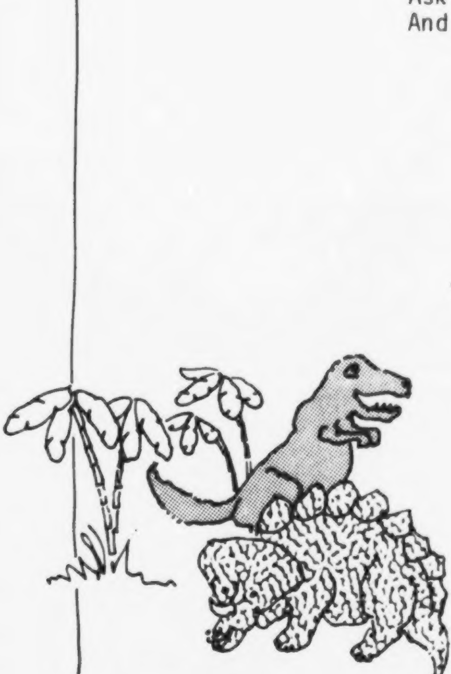
If a giant Trachodon
Stops to tickle you,
Ask him in for dinner
And feed him hot beef stew.

If a giant Triceratops
Stops you on the street,
Ask him in for dinner
And feed him all he'll eat!

The Mighty Dinosaurs

Author Unknown

The mighty dinosaurs stood proud and tall,
They roamed the earth so long ago,
But one by one, we don't know why,
The mighty dinosaurs began to die.
Good-bye dinosaurs
You scared us with your size,
We'd shiver to our toes
If you were still alive.



The Dinosaur Walk

Adaptation of "The Monster Walk"
From *When You Dream a Dream*
By Bob Schneider
Schorn Publishing, Inc.

Adapted by M. Gilmour

Here comes Triceratops,
He's so big and wide.
He's going to tear you apart.
You'd better run and hide!

Everybody do the Dinosaur Walk
Everybody do the Dinosaur Walk
Everybody do the Dinosaur Walk
You'd better run and hide!

(CHORUS)

Here comes Pteranodon,
Watch him swoop and glide.
He's going to peck you to bits.
You'd better run and hide!

(CHORUS)

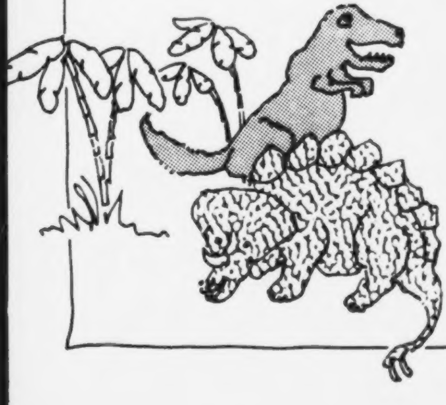
Here comes Tyrannosaurus,
Down the trail he strides.
He's going to pounce on top of you.
You'd better run and hide!

(CHORUS)

The Dinosaur Was Big

Author Unknown

The dinosaur was big,
The dinosaur was mean,
He had the sharpest kind of teeth,
That I have ever seen.
He roared an awful roar,
And really I must say,
If I had not waked up just then,
I might have run away.



A Dinosaur Came to Our Town

Adaptation of "A Dragon Came to Our Town"
From *Fantasy*
By Marlene and Robert McCracken
Peguis Publishers Limited, 1985

Adapted by M. Gilmour

A dinosaur came to our town,
to our town,
to our town.
A dinosaur came to our town one cold and windy day.

He came to eat the boys and girls,
boys and girls,
boys and girls,
He came to eat the boys and girls one cold and windy day.

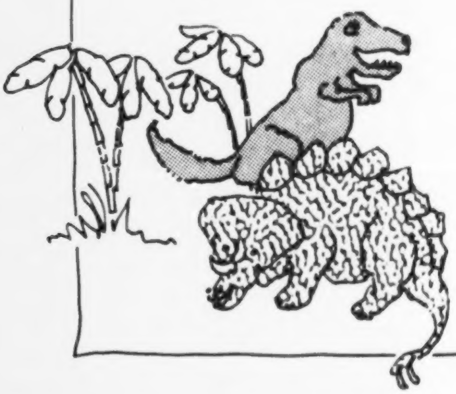
We offered him ____________________, (brainstorm foods)
____________________,
____________________.
We offered him ____________________ instead of us to eat.

He gobbled down ____________________,
____________________,
____________________.
He gobbled down ____________________ and roared for more to eat.

We offered him .... (Continue with other verses.)

He gobbled down ......

He died of indigestion,
indigestion,
indigestion.
He died of indigestion from all the food he ate.



The Back of a Dinosaur

S. Bonea
Source Unknown

What would you do?
Would you blink your eye?
If you saw your friend
riding three stories high?
What would you do?
If he was riding on the back of a dinosaur!
Riding on the back of a dinosaur,
Riding on the back of a dinosaur
As happy as can be!

What would you do?
Would you laugh out loud?
If you saw your friend
with his head in a cloud?
What would you do?
If he was riding on the back of a dinosaur!
Riding on the back of a dinosaur,
Riding on the back of a dinosaur
As happy as can be!

What would you say
If your friend said,
"Oh, I can make this dinosaur
stop and go!"
What would you say?
"Yes, I'll go riding on the back of a dinosaur!
Riding on the back of a dinosaur,
Riding on the back of a dinosaur
As happy as can be!"

What would you say
If he laughed with glee,
And he said, "Come on!
Take a ride with me!"
What would you say?
"Yes, I'll go riding on the back of a dinosaur!
Riding on the back of a dinosaur,
Riding on the back of a dinosaur
As happy as can be!"

Tyrannosaurus Rex Hunt

Adaptation of Going on a Lion Hunt

Adapted by M. Gilmour

We're going on a Tyrannosaurus Rex hunt!
Come on, let's go! (Gesture with arm)
We're not scared. (Shake head)

Walking across the mud.
Can't go over it.
Can't go under it.
Got to walk through it. (Slap hands on legs)

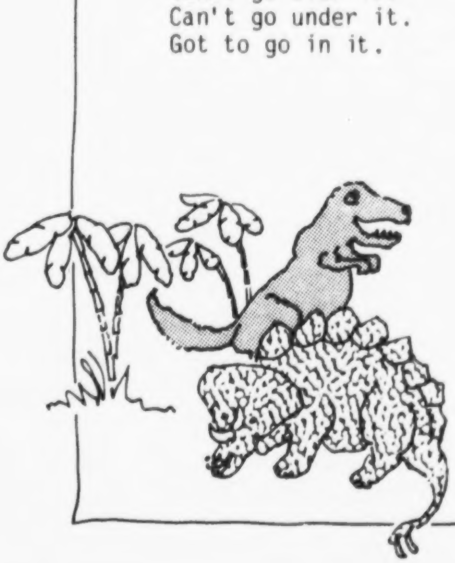
Uh, oh, here's a river.
Can't go over it.
Can't go under it.
Got to swim across it. (Make swimming motions)

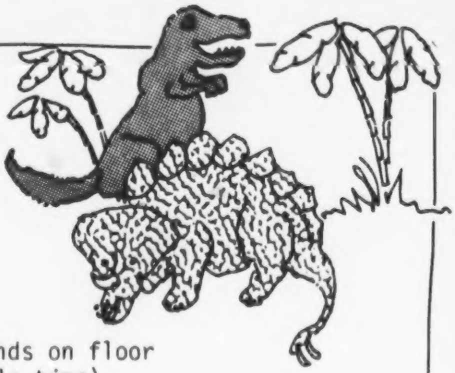
Uh, oh, here's a palm tree.
Can't go over it.
Can't go under it.
Got to climb it. (Pretend to climb tree)

Uh, oh, here's a lagoon.
Can't go over it.
Can't go under it.
Got to wade through it. (Make plodding motions)

Uh, oh, here's a volcano.
Can't go over it.
Can't go under it.
Got to go around it. (Make climbing motions)

Uh, oh, here's a cave.
Can't go over it.
Can't go under it.
Got to go in it. (Put palms together and separate arms)





Ooh! It's dark in here.
I feel a big nose.
I feel lots of sharp teeth.
It's Tyrannosaurus Rex!!!
Let's get out of here!

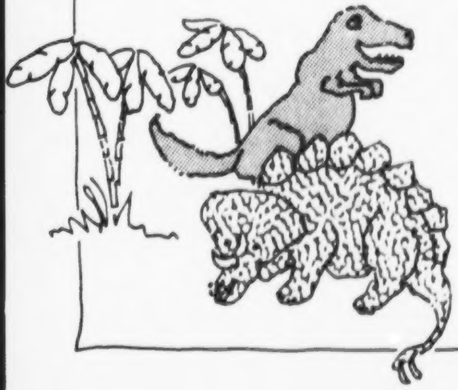
Out of the cave!
Around the volcano!
Through the lagoon!
Up the palm tree!
Across the river!
Through the mud!
Into the house!
Slam the door!
Whew! We made it!

(Slap hands on floor
in double time)

Company

By Bobbi Katz
From West of the Moon (Impressions)
Holt, Rinehart & Winston of Canada, Ltd., 1984

I'm fixing lunch for a dinosaur.
Who knows when one might come by?
I'm pulling up all the weeds I can find.
I'm piling them high as the sky.
I'm fixing lunch for a dinosaur.
I hope he'll stop by soon.
Maybe he'll just walk down my street
And stop for lunch at noon.



The Dinosaurs

From Finger Frolics: Fingerplays for Young Children
By Liz Cromwall and Dixie Hibner
Partner Press, 1983

The dinosaurs lived long ago
When life on earth began.
Some were tall, (Stretch hands upwards to show height)
And some were small. (Crouch down low)
Some liked water, (Make swimming motions)
Some land. (Stomp feet)
Pteranodons had leathery wings, (Flap arms)
Brontosaurus, long necks. (Put hands on jaw, palms up, stretching neck upwards)
And the meanest dinosaur of all
Was Tyrannosaurus Rex! (Stand with feet apart, hands claw-like, scowl and growl)

If I Had a Dinosaur

Words and music by Raffi, D. Pike, B. & B. Simpson
© Copyright 1977 by Homeland Publishing,
A Division of Troubadour Records Ltd.
From the album "The Corner Grocery Store" (Raffi)
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If I had a dinosaur
Just think what we could do.
He could lift me off the floor
And take me to the zoo.

If I had a dinosaur
Just think what we could see.
We could look inside the cloud
Above my balcony.

And if I had a dinosaur
Just think where we could go.
All the way to Grandma's house
To play her piano.

If I Had a Brontosaurus

From Where the Sidewalk Ends
By Shel Silverstein
Harper & Row, 1974

If I had a brontosaurus,
I would name him Horace or Morris.
But if suddenly one day he had
A lot of little brontosauri-
I would change his name
To Laurie.

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Prehistoric

From A Light in the Attic
By Shel Silverstein
Harper & Row, 1981

These lizards, toads and turtles dear, with which you love to play,
Were Dinosaurs and Pleiosaurs in Prehistoric days.
They fought the armoured Ankylosaurs and wild Brontosaurus,
Glyptodons and Varanids and hungry Plateosaurus.
Shark-like Ichthyosaurus and flying Pteranodon,
Tyrannosaurus, Kronosaurus and treacherous Trachodon.
Shrieking Archaeopteryx, Triceratops as well,
And those that I cannot pronounce, nor even try to spell.
But anyway, they slowly turned to lizards and turtles and snakes.
And all the brave and wild prehistoric people-
They turned into us, for goodness' sakes!

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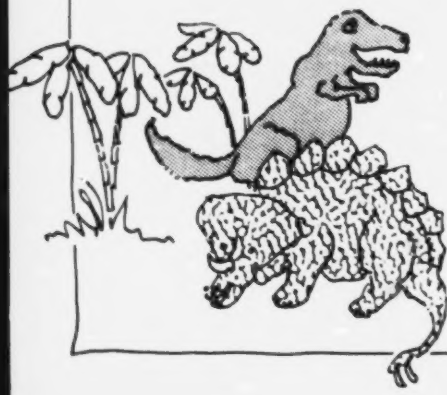


Dinosaur

By Joy Cowley
From Tiddalik (A Story Box Book)
Shortland Publications, 1982

If you found a dinosaur,
Would you take it by the paw?
Would you say, "Come home with me"?
Would you give it greens for tea?

If you found a dinosaur,
Would your father stomp and roar?
Would your mother scream and shout?
Would they shoo the poor thing out?

If you found a dinosaur,
Would you sneak it in the door?
Would you pat it on the head?
Would you hide it in your bed?

If you found a dinosaur,
Would you want to find some more?
Would you gather quite a few,
and start a prehistoric zoo?

Five Enormous Dinosaurs

By Dr. Fitzhugh Dodson
From Fly Away Home (Impressions)
Holt, Rinehart & Winston of Canada, 1984

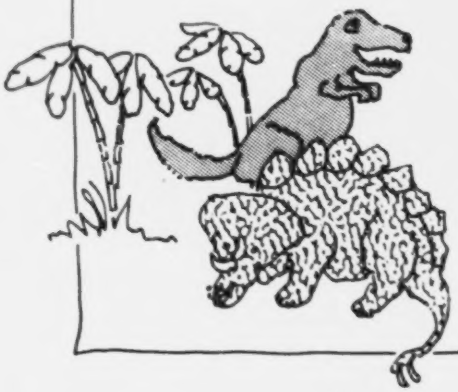
Five enormous dinosaurs
Letting out a roar
One went away
And then there were four.

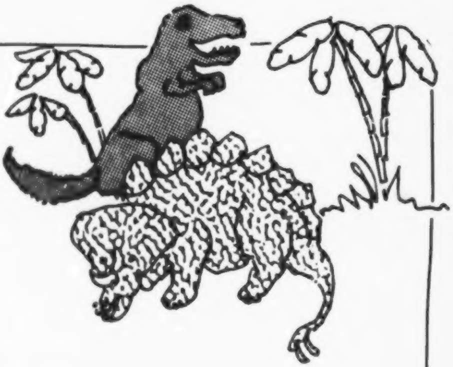
Four enormous dinosaurs
Munching on a tree
One went away
And then there were three.

Three enormous dinosaurs
Didn't know what to do
One went away
And then there were two.

Two enormous dinosaurs
Having lots of fun
One went away
And then there was one.

One enormous dinosaur
Afraid to be a hero;
He went away
And then
there was - zero!





Thunder Lizard, Brontosaurus

Pat Perea
Source Unknown

Thunder. Thunder.
Thunder is what they hear
When the mighty Brontosaurus
Suddenly comes near.

Thunder. Thunder. Thunder.
The ground will shake!
When the mighty Brontosaurus
Thunders to the lake.

The Prehistoric Animal Brigade

By M. L. Reeve
From Ta-ra-ra boom-de-ay
A & C Black Ltd.

Listen to the chorus
Of the brontosaurus
And the stegosaurus
Down by the swamp.

Along comes the dinosaur,
Making such a loud roar,
Thumping with his feet
And going stomp, stomp, stomp.

Pterodactyl flapping,
Long beak clacking,
Big teeth snapping,
Down from the tree.

Here's a wooly mammoth,
Tusks all curly,
Joins the hurly burly,
Oh dear me!

What a noise!
It's the boys
of the prehistoric animal brigade!

I Had a Little Dinosaur

Source Unknown

I had a little dinosaur.
I named him Mr. __________.
I took him with me everywhere,
Even on the __________.

One day my dinosaur got lost.
I searched here and __________.
Until I heard a friendly roar
Behind my father's __________.

When I called my dino's name
He said, "__________!"
I love my little dinosaur,
And he loves me.

The Dinosaur's Lunch

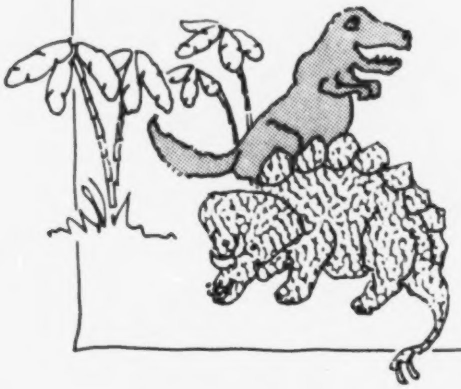
Use the following model to develop a menu for a dinosaur:

____________, ____________, (Brainstorm various foods)
____________, and ______________,
A dinosaur is looking for lunch.

____________, ____________, (Brainstorm more foods)
____________, and ______________,
Now he's got something to munch!

Long Gone

From Zoo Doings
By Jack Prelutsky
Greenwillow Books, 1983



Don't waste your time in looking for
the long extinct tyrannosaur,
because this ancient dinosaur
just can't be found here anymore.

This also goes for stegosaurus,
allosaurus, brontosaurus
and any other saur or saurus.
They all lived here long before us.

Dinosaur Twins

By Inez Hogan
(Adapted version by Mary McQueen)
Source Unknown

Once upon a time, a long, long time ago, even before there were any people in the world, dinosaurs lived on the earth.

Most of them were great, big, huge, enormous creatures. They had big, long names too.

One of the biggest of all dinosaurs was called Tyrannosaurus.

He was one of the fiercest, most terrible monsters that had ever lived on earth.

Tyrannosaurus was the king of dinosaurs.

But there were dinosaurs of all sizes in those long ago days, and this story is about two little ones. They were twins.

One was a boy dinosaur and he was called Morris. The other was a girl dinosaur and she was called Laurie.

Morris and Laurie were afraid of the great, big dinosaurs, but they could run fast and hide in the bushes.

So they skipped happily through the jungle chasing birds. They liked to eat bugs and worms too.

One day when the little dinosaurs were digging for worms, the ground began to shake. Morris and Laurie hid in the bushes.

Brontosaurus was coming. He was huge. He weighed more than ten elephants and his legs were as big as tree trunks. When Brontosaurus walked, the ground shook. It sounded like thunder.

The dinosaur twins always hid when he was around, until they found out that he ate nothing but green plants, and no meat.

"He won't eat us," said Morris. "We're meat. Let's go." "Wait," said Laurie. "He might step on us. Let's peep out to be sure there are no big meat-eaters around."

And it's a good thing they did peep out. Tyrannosaurus was coming. He was the most dangerous creature that had ever walked on the earth, and HE ATE MEAT.

"Don't move," said Morris. "That monster could eat both of us in one bite. Look at that big mouth and those sharp pointed teeth."

"He's chasing Brontosaurus," said Laurie. "He's after a big meal."

"He'll catch him too," said Morris. "Brontosaurus can't run very fast with those heavy legs."

"Let's follow them and find out," said Laurie. "But we had better be careful."

So the little dinosaur twins sneaked along through the bushes, keeping out of sight.

"Look!" said Morris. "Tyrannosaurus has eaten Brontosaurus. There is nothing left but bones."

"I'm going to catch that bird," said Laurie. "You dig in the ground for worms. And when I come back we'll have a big meal to share."

But Laurie didn't come back. She had to chase the bird a long way before she could catch it.

And by that time she was far away from her brother. She was lost.

"I must find my brother," she thought. But she didn't know which way to go.

So started to run around looking for him.

Then along came Stegosaurus. He was a fierce looking dinosaur. Laurie was so scared she couldn't move. She stood there staring at the big monster with long sharp spikes on his tail.

"Don't be afraid of me," said Stegosaurus. "I'm not a meat-eater. Why are you running around in circles?"

"Because I'm looking for my brother," said Laurie. "And I don't know which way to go."

"Then don't go anywhere," said Stegosaurus. "Stay in one place so your brother can find you. There are many meat-eating monsters in this jungle. Here comes one now!"

"Quick! Crawl under me. It's Tyrannosaurus, the king of dinosaurs. He's a meat-eater, but he won't eat me. He's afraid of the sharp spikes on my tail and the plates of armour on my back."

"Are all of the big dinosaurs afraid of you?" asked Laurie.

"They're not afraid of me," said Stegosaurus. "They know I'm not a meat-eater, but they keep out of my way because of my spikes and armour. I go where I please. Let's go find your brother. We'll go to the river first. All creatures go there to drink."

"Wait!" screamed Laurie, running for safety under the big body of her friend Stegosaurus. "LOOK!"

Pteranodon, the flying dragon, was diving down from the sky.

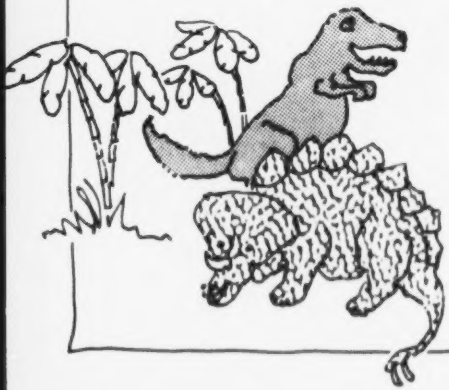
"The world is full of terrible things!" cried Laurie.

"The world is full of good things too," said Stegosaurus.

"Like what?" said Laurie.

"Well," said Stegosaurus, "It's a good thing you have a well-armoured friend like me to hide under. It's a good thing you have a twin brother to look for."

"And," said Laurie. "It's a good thing I have a friend to help me. You have a good brain in your head."



"I have two brains," said Stegosaurus. "One is in my head and one in my tail, and the brain in my tail says danger is near. The brain in my head says, 'That's Triceratops. He won't eat you. He's not a meat-eater. He eats only green plants and eggs. And you're meat.' Now let's go find your brother."

So they started out, but they hadn't gone far when they met Styracosaurus.

"Don't run away," said Stegosaurus. "He's a plant-eater. He won't eat you."

"He looks awfully fierce," said Laurie.

"That's his armour," said Stegosaurus. "To protect him from the big meat-eaters. Let's look for your brother near the river. All dinosaurs have to go there to drink water."

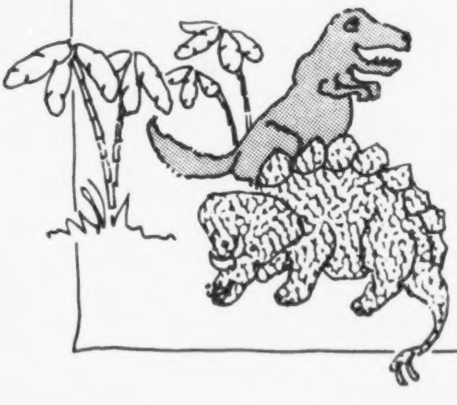
"Of course," said Laurie. "I wish I had two brains like you. When I find my brother, he and I will always stay together. Then we'll have two brains. One in my head and one in his head."

So Laurie followed close behind her friend Stegosaurus and they came to the river. "Look at all the dinosaurs in the water," said Laurie. "I see another Brontosaurus. "Hello, Brontosaurus," shouted Laurie. "Why are you going in the water?"

"I come here to rest," said Brontosaurus. "The water helps to hold up my heavy body. I have friends here too. The duck-billed dinosaur beside me is my friend. We both like to eat the water plants."

"Plesiosaurus lives in the water and Tylosaurus does too, but we keep away from him. He's a fierce one."

"I'm hungry," said Stegosaurus. "I'll eat some plants. You dig up some worms, but don't start chasing birds and get lost again."



"Did the brain in your tail tell you that?" asked Laurie.

"Yes," said Stegosaurus. "And the brain in my head says this is a good place to find your brother. He will come here to drink water. Wait for him. Now the brain in my head tells me it's time to go. Good-bye."

"Thank you for helping me," said Laurie.

Then Laurie did exactly what her friend Stegosaurus told her to do. She found a good place to hide in the tall grass beside the river, and waited for her brother Morris to come for a drink.

All kinds of dinosaurs came, but Laurie stayed hidden. She didn't know which ones were meat-eaters. Then she saw Trachodon eating leaves.

Laurie stuck her head out and said, "Have you seen my brother? He looks just like me. We're twins."

"No," said Trachodon. "I have never seen a dinosaur as little as you. I hope you find your brother. You are too little to run around alone. The world is full of meat-eating monsters. Here comes one now."

"Run!" cried Laurie. "That's Dimetrodon. Look at those sharp teeth. Come on, let's hide."

"Wait!" shouted Trachodon. "The river is the safest place for us."

"I can't swim," cried Laurie.

"Then hop on my back," said Trachodon. "I'm a good swimmer."

"This is fun," said Laurie.

"Keep your eyes open," said Trachodon. "We are looking for your brother and we should keep calling him. Maybe he's hiding from the big ones just as you did."

Laurie started calling, "Morris, Morris." But there was no answer.

"Maybe he's drowned," said Laurie. "He can't swim and the water is getting deeper."

"Well, I can swim," said Trachodon. "Hold on tight. I'll swim close to shore and you keep calling."

"Look!" shouted Laurie. "Here comes Tylosaurus. He's a fierce one. My friend Brontosaurus told me about him. He's a meat-eater too."

"He won't eat us," said Trachodon. "I can run on the shore if he comes close and he can't. He has to stay in deep water."

"I hope he didn't eat up my brother," said Laurie. And she began to cry.

"Here we are safe on land," said Trachodon. "I'm glad I live on land," said Laurie. "There are some fierce meat-eaters on land too," said Trachodon, "But you are little. You can hide easily."

"When that monster goes away we'll go back in the water and stay close to the shore waiting for your brother to come to the river to drink."

So they hid in the bushes and watched until the monster swam away.

Then they started hunting up and down the river near the shore.

And at last they found Morris hiding in the tall grass.

Morris came running out when he saw his sister riding on Trachodon's back and...

The dinosaur twins had fun sliding down Trachodon's back into the water together, and...

They lived happily ever after.

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